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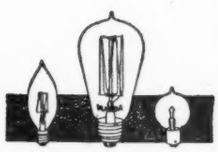

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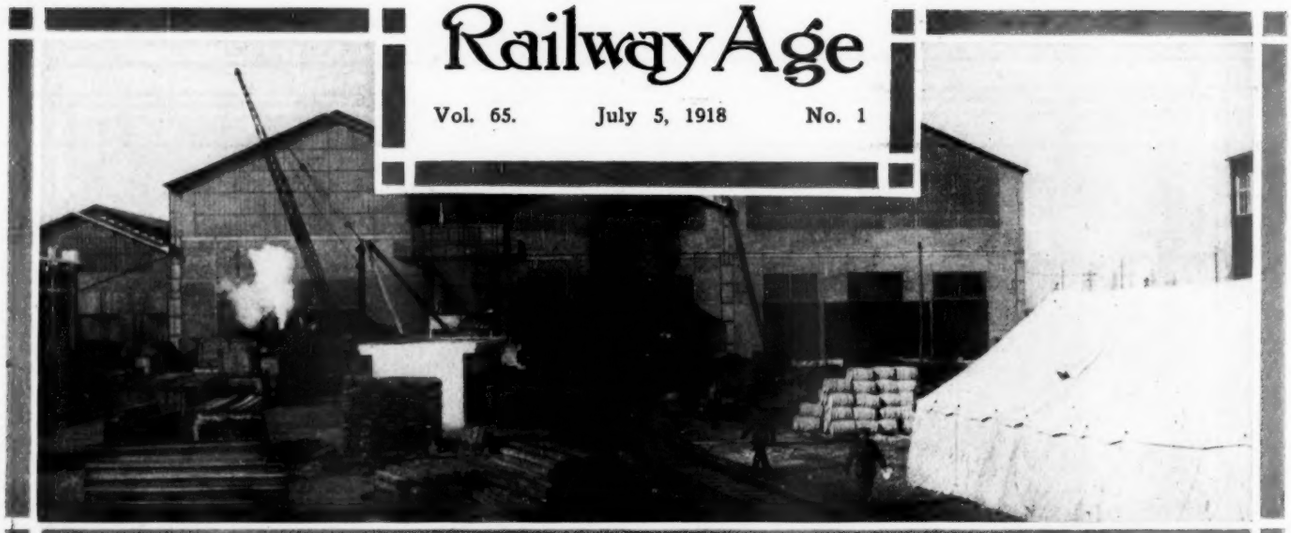
Railway Age

Vol. 65. July 5, 1918 No. 1



At One of the Busy English Railway Shops in France. British Official Photo from U. & U., N. Y.

Contents

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WE GUARANTEE, that of this issue 7,900 copies were printed; that of these 7,900 copies 6,552 were mailed to regular paid subscribers, 172 were provided for counter and news companies' sales, 308 were mailed to advertisers, 432 were mailed to exchanges and correspondents, and 406 were provided for new subscriptions, samples, copies lost in the mail and office use; that the total copies printed this year to date were 252,842, an average of 9,364 copies a week.

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EDITORIAL

Railway Age

Publishers' Costs Increase

ON JULY 1 the law went into effect establishing a system of zone postal rates on all publications. It provides for eight zones radiating from the place of publication with progressively higher rates in each zone. These rates will be increased each year for four years, until increases have been effected ranging from 50 per cent to 900 per cent higher than the present flat rate of one cent a pound. Few, if any, publications will be able to stand these extra costs, and if they are to continue in existence the additional postal charges will have to be collected from the readers and advertisers. We hope that the present Congress may yet take steps to remedy the situation and for the next few months at least no readjustment will be made in our rates in the hope that it may not be necessary. It hardly seems possible that Congress will allow to continue in effect a law which tends to penalize the dissemination of intelligence, and in these days, especially, when the publications are doing such splendid work in helping to win the war; it would seem to be positively dangerous to cripple them.

Expediting Railway Traffic

That automatic signals, properly installed, will expedite traffic goes without question. The advantage of the automatic block system over the manual block has been discussed before and need not be referred to again. It appears that some roads are not making the best use of the automatic block signals installed on their lines, in that the movement of trains may be materially improved by the elimination of certain forms of written train orders, conveying such information to the engineman by means of signal indication. It remained for the Erie, after an installation of automatic block signals on the Susquehanna division, to change its telegraph train despatchers' wire over to telephone train despatching and to locate three-position power-operated train order signals on automatic block signals controlling line sidings and crossovers at certain points over the division. These train order signals are controlled from open train order offices on instructions from the despatcher to the operator at that point. These signals may be located a mile or more from the point of control, and give the information to the engineman at the point where he is to act upon it. This eliminates the necessity of a train slowing down or stopping to receive orders for it to proceed. Telephones are located at all points where train order signals are placed enabling the trainmen to communicate with the despatcher at such points. A few simple rules are all that are required to put into effect such a method of train operation. The use of this system in connection with automatic signals has produced such excellent results in the operation of trains on the Erie that it is worthy of the careful consideration of other roads. In this connection it would seem that traffic can be handled to still better advantage by the use of low voltage switch movements at certain locations in connection with the train order signals.

Salaries on the Railroads

Since the government took over the railways there has been much talk about drastic reductions of the salaries of the higher officers. The prospects of such reduction has been regarded with apprehension by officers of all ranks who naturally have felt that drastic reduction of the higher salaries would deprive ambitious men of large prizes to work for, and that it might also practically compel reduction of the salaries of many officers of lower rank. The Railroad Administration has not announced the policy it is following in fixing salaries, but the salaries fixed have leaked out in several cases, and definite information which the *Railway Age* has indicates that higher, and, in some cases, much higher amounts are going to be paid than has heretofore been expected. It would appear that the Administration is finding that in the matter of salaries, as in the matter of wages, it must meet competition if it is going to keep good men in the service. It has been exposed to competition from other industries which are engaged in war work and from the railway companies, which naturally have desired to keep able men in their service to deal with the Railroad Administration. In consequence, while no definite figures can be published, it can be said that doubtless so long as the Railroad Administration continues to recognize the fact that it is essential to efficient operation that it shall have able men in important positions there will be numerous large prizes in railway service for ambitious men to work for; and it would appear that so long as the present director general is in charge the fact that brains and experience are necessary to efficient operation will be recognized. Generally speaking, however, federal managers probably will not be paid as much as railway presidents have been and many former presidents who are accepting the appointments as federal managers have to make financial sacrifices to do so.

The Labor Panorama

Conditions are changing so rapidly with respect to railway labor and particularly the unskilled labor employed so largely in maintenance of way work, that it is difficult for one to keep abreast with the latest phases of the situation. There is one condition which remains permanent, namely that there is not enough labor to satisfy the demands. The roads are suffering acutely from the existing shortage of labor as manifested by the limited output of work. The situation differs little from that of other large industries except in degree. The roads are handicapped in their competition for men with these industries by their inability to raise wages sufficiently to secure their share of the men. In general this inability to compete for men through increased wages is limited by the earnings of the roads although in the west it is limited even more rigidly by the fixing of maximum wage rates by the regional directors. This measure eliminates the competition between roads. It does not, however, prevent a contractor or an industry from taking men from the roads through the offer of higher wages. In an endeavor to stop

losses of this character the Railroad Administration only a short time ago requested the United States Department of Labor to assist in preventing the disorganization of the labor market by competing government contractors. At that time it was said that the department did not then possess the necessary authority to eliminate this practice. Since then regulations have been issued requiring all industries employing more than 100 men to secure their common labor through the United States Employment Service after August. In this way the Department of Labor is endeavoring to eliminate private competition for laborers through independent labor recruiting activities which have demoralized the labor market and caused a tremendous labor turnover during recent months.

Another development of the last few days is an order issued by the Secretary of the United States Department of Labor waiving the literacy test and the head tax to permit the temporary admission of Mexican laborers who could not otherwise enter this country, for employment in maintenance of way work on railroads. While this measure is surrounded with complicated restrictions, it will undoubtedly be possible to bring a considerable number of men from that country into the Southwest. The classification of certain industries as non-essential and the prohibition of men of draft age from employment on the non-essentials is also releasing some men for railway work. While none of these measures in themselves is sufficient to relieve the shortage which now exists and while all of them are coming so late in the season that they will result in only limited relief on the roads, they will, nevertheless, have some influence of a beneficial character.

Centralized Buying for Railroads

It need hardly be said that selling to railways at present is a somewhat different thing from what selling to them was when they were under private management. This applies especially to the selling of new cars and locomotives and of the specialties to be used on them.

When the railways were under private management there were many railway companies, both large and small, which were buying new cars and locomotives and the specialties for them. There will continue to be many railway companies to sell to, since the Railroad Administration has decided to return to private control a large number of short line railroads. It will, however, retain all the large roads. It has centralized the purchase of cars and locomotives and of specialties for them in the hands of a single committee and so long as this committee retains its present authority it will have practically a monopoly of the purchase of cars and locomotives and of their specialties, while the numerous equipment supply companies will be in the position of competing with each other for the orders which the committee places.

The centralization of the buying of equipment and of equipment specialties puts on those to whom this function has been delegated most important duties and very heavy responsibilities. The design of the equipment, and the specifications of the specialties which might be bought, were assigned by the director general to a committee of railway mechanical officers. This committee made lists of specialties of each kind which it believed the Purchasing Committee should select from. It would appear, however, that the mechanical committee did not very definitely indicate what it considered to be the relative values of the different specialties listed, for it is evident that the Purchasing Committee in doing the buying has been governed mainly by consideration of price. Furthermore, the list of approved specialties was so made up as to exclude from consideration a not inconsiderable number of devices which had been used on some important railways, and the outcome was that some companies which had been getting a good business from the railroads got none at all, and in many cases the orders were divided between different competing companies on radically different bases from those on which they were divided when the individual companies were doing their own buying.

It may be that when future orders for equipment and equipment specialties are placed the orders will be divided differently and that in the long run all legitimate concerns in the supply business having good products to sell will get amounts of business not radically different relatively from the amounts they have secured in the past. There are certain reflections, however, which the way in which recent orders were placed very forcibly suggests. One of these is that when men of technical training and experience have comparatively as little to say, and men of purely purchasing training and experience so much to say about the things that shall be bought, as was the case with respect to the recent purchases, price is almost certain to be given more weight than quality, and that the tendency will be to give the bulk of the business, not to the best bidder, but to the lowest bidder. Now, while this policy will enable the Railroad Administration to make a better immediate showing, it will inevitably cause a deterioration of the equipment and supplies made, and, in consequence, a deterioration of the equipment placed upon the railroads. Whatever deteriorates the equipment will necessarily reduce the length of its life and increase the cost of maintaining it, and, in the long run, reduce the economy and efficiency of the railways.

Another reflection which recent developments forcibly suggest is that such centralization of purchases as has occurred has put an enormous power over the future of the railway equipment and supply companies and of the railways themselves in the hands of a few men—that is, the Director of Purchases and the three members of the Central Purchasing Committee. Formerly, if a locomotive or car builder or a manufacturer of specialties could not convince the purchasing department of an individual railway that it should buy from him he had hundreds of other purchasing departments which he had a chance to convince. At present, if he cannot convince the Central Purchasing Committee and the Director of Purchases that they should buy from him he has got to get out of business so far as new equipment is concerned. Now, the railway equipment and equipment supply business of this country is an enormous industry, and it seems to be very questionable whether it is fair or wise to place it largely at the mercy of a few men in Washington who, after they have been there awhile, are certain to get out of touch with actual conditions on the railroads. As to the railways, if these few men in Washington make mistakes in buying, the effect is going to be felt not merely for a short time, but for years to come, on every road in the United States. In other words, these few men may easily make mistakes of judgment which will be ruinous to many legitimate businesses, which will be greatly injurious to the railways as a whole, and which, in the long run, may cost the people of the United States hundreds of millions of dollars.

In view of these and many other considerations which might be mentioned the *Railway Age* is very strongly of the opinion that the question whether the present system of designing cars and locomotives and of specifying and of buying specialties for them is sound, is one which should be given very serious study by the director general and all the important men in his organization. We believe its soundness is open to most serious question, that some very unwise things are being done, that the system itself, rather than individuals in the organization, is mainly at fault, and that the system must be radically changed or great harm will be done to the railway equipment and supply companies, to the railways and through them to the public. It is a system which is much better adapted to cause the buying of poor equipment and to interrupt progress in the technical development of the railways than it is to produce any lasting good results.

The Circus Train Disaster

THE rear collision at Ivanhoe, Ind., on the Michigan Central on June 22 (reported in our issue of June 28), is the most disastrous train wreck that has occurred in America, measuring by the number of persons killed, since March 1, 1910, when 90 persons were killed and 16 injured at Wellington, Wash., where a train was swept down the side of a mountain by an avalanche. This collision* is like that at Mount Union, Pa., in February, 1917, and a number of others, in that it occurred on a road which is well provided with signals and is reputed to maintain good discipline. Neither the engineman nor the fireman was dead or visibly incapacitated, though it appears, at the present writing, that the engineman was asleep or dozing. The immediate question, therefore, is that of the general reliability of enginemen. The automatic train stop, which obviates disaster when the human pilot fails us, is used on the very busy lines of the subways in New York and London, and to a limited extent elsewhere; but is not in general use. Roads like the Michigan Central, and others of that class, justify themselves in its non-use because of the high relative safety of their train operations without such a complicated and costly safeguard. (Competent and careful signal engineers estimate that a complete automatic stop system would add 100 per cent to their present large investment in signal apparatus.)

The best American locomotive enginemen make high records for safety. One element in this safety is the rule, included in the train-rule codes of substantially all large railroads, that the fireman shall act as a monitor for the engineman; that both fireman and engineman shall see each fixed signal as they approach it, and shall make sure that the matter has not been forgotten, by speaking to each other. This rule, properly carried out, is a check on sleepiness or inattention. It ought to be a useful check and, no doubt has, many a time, brought back to a sense of immediate duty an engineman whose mind was wandering; but the rule has not proved itself reliable. It has failed too many times. No manager can place definite dependence upon it. Every superintendent or trainmaster who rides much in the cabs of locomotives can testify that well-disposed enginemen—let alone the dull or conscienceless—carry out the rule in a way that leaves much to be desired. To make this safeguard of real value, of such value as to be an element in the manager's night-and-day confidence in the safety of his railroad, the engineman must be a high grade man, well educated in "safety-first"; and he must have a well-trained and conscientious fireman. Further than this, he and his fireman both need very frequently to have their vigilance and their judgment tested by a road foreman. The percentage, on a large road, of engine crews which in one or more of these conditions is lacking, is far too large for the reputation of this rule. Accidents like Mount Union, Shepherdsville, Schodack Landing (reported last week) and Ivanhoe must be taken as warnings that it cannot be depended on.

How often and for how long must such warnings be repeated? Railroad officers admit, in private conversation, that the logic of our accident records forces the conclusion that an automatic train stop, or, at least, an automatic audible warning, is the only satisfactory answer to the demand for the safe transportation of persons and property and the protection of trainmen's lives. When is this feeling going to be crystalized into something that will mark definite progress? There is a report, in another column, of a new automatic train stop which has been tried at Barto, Pa., on the Philadelphia & Reading. This trial calls attention to the fact that the subject of automatic stops is not dead and abandoned, although at times such may seem to be the case.

* The most recent collisions which may be classed as of the first magnitude are the following: Frost, S. C., February 25, 1918, 12 persons killed; Shepherdsville, Ky., December 20, 1917, 47 persons killed; Kellyville, Okla., September 28, 1917, 25 persons killed; Mount Union, Pa., February 27, 1917, 20 persons killed.

Letters to the Editor

How to Cut Down Switching Costs

CHARLESTON, S. C.

TO THE EDITOR:

Certainly needless service is one of the worst kinds of waste of fuel and man-power, but now that the timetable has been pretty well trimmed, attention should be directed to unnecessary moves made by road and yard engines while switching in the yard. It is practically impossible to estimate the waste of fuel and wear on man and machinery in this service, but it is an enormous figure.

The marked saving realized since Progressive Examinations have been provided for locomotive firemen, suggests the idea of extending some suitable examination for the trainmen and switchmen. Several general yardmasters have estimated that 10 per cent of the moves made by locomotives in yard service are unnecessary; of course this would be less for hump yards. The writer recently rode a yard engine in a small yard where there were probably twenty cars on eight tracks; we went in on each track several different times and shuffled the cars like a deck of cards. I was not checking unnecessary moves, but the waste was so glaring I finally asked the engineer if they were killing time. He replied: "No, this is the usual procedure; it takes all of the conductors but one three hours to switch this yard; this other conductor can switch it in about 40 minutes."

This may be an unusual case, but since then I have made inquiries that lead me to believe that it is a very common one, and it is not surprising when one considers the qualifications necessary for a good switchman, and the haphazard methods followed in employing them. They are put on the road with no training, except what they get on a few student trips, probably with young inexperienced men who have never heard of fuel economy. In this way the job has been cheapened. They say, "anyone can switch cars." That is true, but they cannot make up and brake up trains with a minimum number of moves. Proper training of these men before they are employed would place the job on a higher plane, and a better class of men would enter this branch of the service.

The training should consist of switching cars on a chart in a miniature yard, or by actual demonstration in the train yard. The latter would prove expensive and limited yard room would prohibit it in most places. The miniature yard is most practicable. They should also be taught how the railroad wants them to meet the public. These men talk with some of the largest shippers daily, and some of them much oftener than the superintendent. When they are promoted to passenger service they meet the families of the very best people, so it is of the utmost importance that they be properly trained in talking business, and under all circumstances to be courteous.

Heating and ventilating cars should also be touched on, for it is well known that this feature is not properly taken care of by our trainmen, although some of them are willing. New passenger cars are placed in service with new style ventilators and steam heat valves, and no instructions are given the trainmen; this results in numerous complaints from the passengers because the cars are either too hot or too cold. A number of the roads require very rigid physical examination; if they will direct the same amount of attention to the mental training, the twenty-five cents per car for switching service, which most of them are now paying, would be reduced considerably and the public would be kept in a much better frame of mind.

J. S. BREYER,
Master Mechanic, Southern Railway.

The Caution Signal

PITTSFIELD, MASS.

TO THE EDITOR:

In his article entitled, "Relation Between Train Handling and the Caution Signal," which appeared in the *Railway Age* of May 24, 1918, F. H. Nicholson, of the signal department of the New Haven, proves by means of charts and diagrams that wherever train speed is properly limited the interpretation of the caution signal should be, "Reduce speed at once and proceed with caution."

This conclusion is amply justified on grounds of safety alone; but in addition it can also be shown that to reduce speed immediately upon passing a signal set at caution is the best practice from considerations of economy in time, in fuel required to get the train over the road, and in wear and tear of equipment.

There is nothing made by running at full speed as far as you can past the caution signal. There is neither economy in fuel nor saving in time; while the practice always entails more or less uncertainty as to the safety of the train, as experience has plentifully demonstrated in the past.

When the speed of a train, running, say, at the rate of 60 miles an hour at the instant the locomotive reaches a caution signal, is promptly and continuously reduced to a rate of 25 miles an hour, that train may then be said to be under control; for with brakes of average efficiency a passenger train may be stopped from a speed of 25 miles an hour, easily, with the service brake, within a visual distance as small as 150 ft. A train moving through the remainder of the block at the reduced rate of speed allows more time for the stop signal to go to "clear," if it is to clear at all, than if it approached it at higher speed; thus we reduce the likelihood of having to come to a complete stop at that signal

If a stop signal clears while a train approaches it at about 25 miles an hour it may be accelerated again to high speed in less time and with less expenditure of fuel than one that approached at high speed and had to stop dead in consequence of arriving a little too soon for the signal to clear.

If the stop signal does not clear for the train approaching it at the reduced rate of speed, and the train is obliged to stop on this account, it is no worse off with respect to time lost than the other which ran at high speed to the braking limit point and then had to stop.

These considerations suggest the question, If the train is under perfect speed control approaching a stop signal that is set against it—and it always should be—what is the necessity of stopping it at all at that signal? This question is especially pertinent in the case of automatic and of permissive block systems unless, of course, the reason for stopping is immediately apparent in the form of a train ahead or of some other obstruction. Why not modify the present operating rules so as to omit the full stop? Allow the engineman to proceed continuously at such rate of speed as the circumstances of each case warrant; have him run under the conditions that he is now required to observe when he enters a block under permissive restrictions.

There can be but little doubt that if the signal engineers of our railroads were to go carefully into this matter they could easily suggest many revisions and modifications of the signal operating rules that, if put in force, would make for economy in consumption of fuel and in saving of time, without in the least encroaching upon the safety of train operation.

JOHN P. KELLY.

The Chinese Railways

NEW YORK.

TO THE EDITOR:

I have just had an opportunity to read the article on the Chinese railways in your issue of March 29.

The statement in regard to the financial position of the government railways, which includes practically all the railways in China, is perhaps liable to create the impression that the railways, on the whole, are not financially successful, and as a matter of interest, I beg to enclose herewith a statement showing the earnings and expenses per mile for the year ending December 31, 1915, which you may think of importance enough to publish.

It will be noted that these figures are in Mexican dollars, which are worth at the present time about 75 cents American gold, but which normally are worth only about 50 cents.

The accounts of the Chinese railways since 1914 have been kept approximately according to the system of accounting established by the United States Interstate Commerce Commission, but it seems to be customary to show in all statements the deduction of the fixed charges from the net income. The total net income for the year ending December 31, 1915, was approximately $27,000,000 (Mex.), the fixed charges being $17,000,000, leaving a surplus of about $10,000,000.

Although it is true that of 15 railroads only 5 lines showed a surplus after paying the fixed charges, it is also true that these 5 lines represented more than half the mileage operated, so that the financial condition seems to me to be rather better than might be inferred from a casual reading of the article above referred to.

Similar figures for 1916 show the following totals:

Year ending December 31, 1916:

	Per Mile
Miles operated	3,384
Operating revenue	$18,547
Operating expenses	8,549
Net	$9,998
Interest on funded debt and miscellaneous expense	3,947
Surplus	$6,051

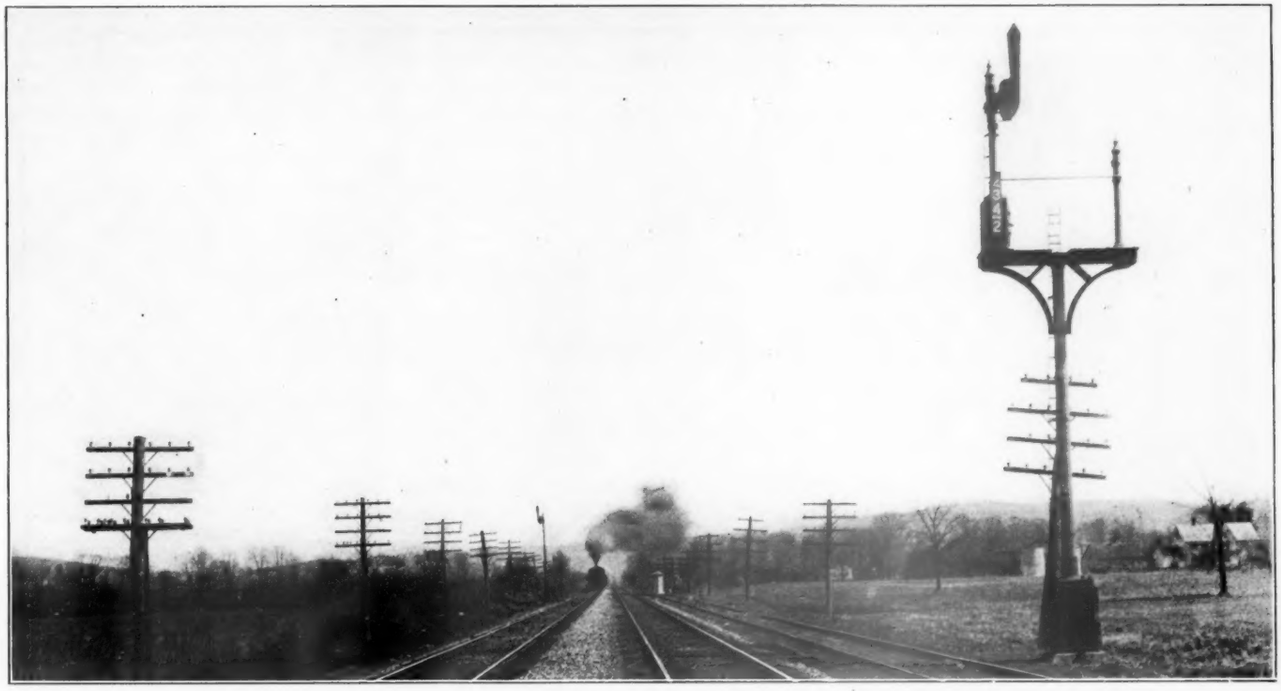
In 1916 only four roads showed a deficit after paying fixed charges.

F. LAVIS.

CHINESE GOVERNMENT RAILWAYS. INCOME ACCOUNT—YEAR ENDING DECEMBER 31, 1915 *(Income Factors Per Mile of Road in Mexican Dollars)*

	Line	Miles line operated	Gross revenue	Operating expenses	Net operating revenue	Operating ratio	Other income	Total net income	Fixed charges (inc. taxes)	Surplus or deficit
1.	Peking-Hankow	818	20,955	8,704	12,251	42	118	12,369	4,460	7,909
2.	Peking-Mukden	600	25,463	12,633	12,830	50	247	13,077	2,071	11,006
3.	Tientsin-Pukow	688	12,391	7,714	4,677	62	45	4,722	8,462	—3,740
4.	Shanghai-Nanking	203	16,838	9,969	6,869	60	121	6,990	9,390	—2,400
5.	Shanghai-Hangchow-Ningpo	168	18,462	8,740	2,654	76	941	3,595	6,240	—2,645
6.	Peking-Kalgan	148	18,462	9,773	8,689	53	77	8,766	147	8,619
7.	Kalgan-Suiyuan	*119	7,404	4,286	3,118	58	not yet	operated—construction		period
8.	Cheng-T'ai	151	13,983	8,738	5,245	63	213	5,458	6,239	—781
9.	Taokow-Chenghua	95	6,667	3,998	2,669	60	1	2,670	5,028	—2,358
10.	Kaifeng-Honan	115	10,054	4,623	5,431	46	52	5,483	7,697	—2,214
11.	Kirin-Changchun	81	11,248	9,426	1,822	84	36	1,858	2,578	—720
12.	Chuchow-Pinghsiang	†60	6,088	4,102	1,986	67	60	2,046	35	2,011
13.	Canton-Kowloon	90	8,953	8,939	14	99	130	144	11,342	—11,198
14.	Canton-Samshui	30	28,353	16,000	12,353	56	33	12,386	43	12,343
15.	Changchow-Amoy	20	893	2,215	—1,322	—248	45	—1,277	3,170	—4,447
		3,267	17,098	9,034	8,064	53	162	8,226	5,292	2,934

* Figures concerning Kal-Suiyan Line not included in totals.
† Figures concerning the Chuchow-Pinghsiang and Changchow-Amoy Lines are for the period July 1 to December 31, 1915.



Automatic block signal at leaving end of E. B. siding, L. R.

Train Operation by Signal Indication on the Erie

The Use of Power-Operated Train Order Signals Has Eliminated Some Forms of Train Orders

By Henry M. Sperry

THE 999 MILES of main line of the Erie from New York to Chicago is completely equipped with automatic block signals, with the exception of 184 miles. Progress in the installation of automatic block signals on the Erie did not make much headway until 1910, when they were put in use on the Susquehanna division. In 1906 only 6.8 miles were reported in service and in 1909, 124.8 miles; but by 1916 the total was increased to 1,018.1 miles of road. The improved results in train operation under automatic block on the Susquehanna division account in part for the progress made since 1909.

Prior to 1910 the Susquehanna division, which is a heavy traffic division, was operated under manual block and telegraph train dispatching. The following is a brief summary of the disadvantages experienced under the manual block and the improvement in train operation under the automatic block:

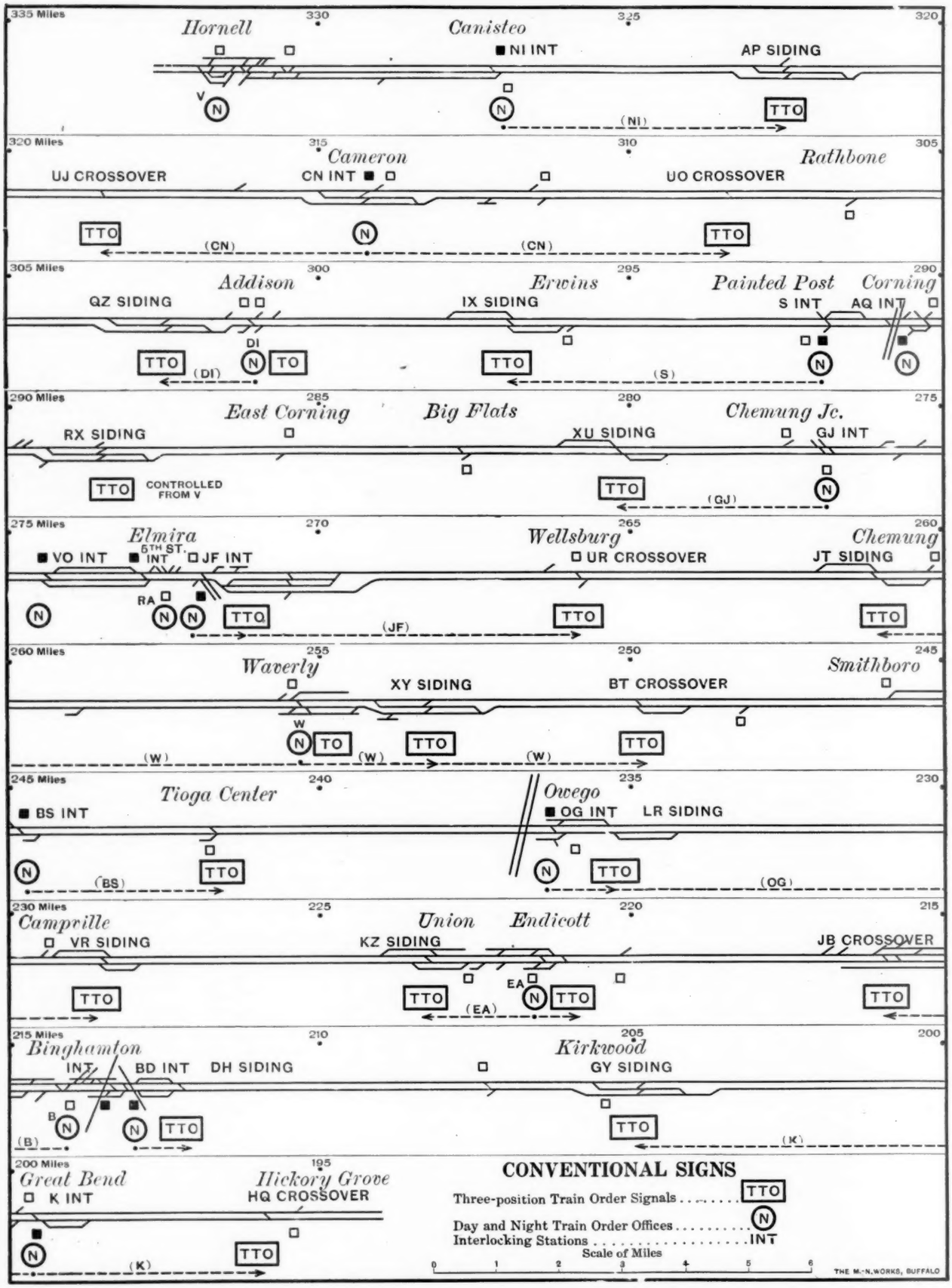
(a) There were excessive delays under the manual block due to a common fault of this system, i. e., irregular lengths of and excessively long blocks. These delays were eliminated by the automatic block signals, as the automatic block made it possible to increase the number of block sections and make them of a length to permit the movement of the maximum number of trains without delays.

(b) The number of blocks was changed from 90 manual blocks to 296 automatic blocks, an increase of 206 blocks. By the change from the manually-operated system to an automatic one, the number of block signalmen was decreased from 136 required under the manual block to 58 under the automatic, with a corresponding decrease in wage expense.

(c) The use of written train orders was almost entirely discontinued following the installation of the three-position train order signal used for the purpose of directing train movements by signal indication. This use of the three-position train order signal marked a distinct step forward in train operation. The blind passing sidings and also blind cross-overs were equipped with both telephones and three-position train order signals, the signals being operated from the nearest day and night train order office one or more miles distant. By this arrangement the train dispatcher could direct train movements at these points by signal indication, a marked improvement over operating blind sidings equipped with telephones only.

(d) The results under this method of train operation by automatic block signals and three-position train order signals were shown by a saving in train operation of $87,969 for the first year operated under automatic block signals in comparison with the previous year under manual block.

In making a comparison of the results of train operation under two different systems of signals to determine the relative value of each, it is necessary to select a road where the track facilities and motive power are the same for the periods covered by the comparison. If, as is often the case, track facilities are increased or there is an increase in the tractive power of the locomotives, credit must be given not only to the improved signal facilities, but to all other improvements that might affect the result in making any comparison. The Susquehanna division of the Erie was selected because the improved results were due entirely to the improvement in



Passing Sidings and Train-Order Signals; Susquehanna Division, Erie Railroad

the signal facilities, there being no change whatever in track facilities or motive power.

This division runs almost due west from Susquehanna, Pa., to Hornell, N. Y., 139.7 miles. The entire distance is double tracked. The alinement is 70 per cent tangent, with a curvature for the balance of 32 deg. per mile. This division is 31 per cent level, and the ruling grade is but 0.3 per cent. Passing sidings are all long enough for 85 car trains. The total number is 31, of which 16 are used for eastbound and 15 for westbound trains. The important junction points are six in number—Binghamton, Owego,

Automatic Block and Train Order Signal at Passing Siding L R

Waverly, Elmira, Corning and Addison. The freight traffic for 1917, measured in tons carried one mile per mile of road, averaged 14,373,017.

Handicaps of the Manual Block

Prior to the installation of automatic block signals the Susquehanna division was operated under manual block signals with a total of 46 block signal stations, 18 of which were block stations only and 28 both block and interlocking stations. The average length of blocks was 3.07 miles, but there was a wide difference in their length. The shortest block was 0.30 mile in length, and 30 blocks ranged from 0.39 to 4 miles; eight blocks from 4 to 5 miles; six blocks from 5 to 6 miles; one block 6.89 miles, and the longest block 7.27 miles in length. This variation in block lengths is characteristic of the manual block, as block stations are usually placed at passenger stations, passing sidings, junctions, etc., with the result that it is often impossible to avoid delays to trains moving under close headway. It is also the usual practice to close a number of the block stations at night.

This often results in making a number of the block sections excessively long, and thus creates an added source of delay. The operation of 46 stations required a force of 136 signalmen at a total cost of $94,752 a year for wages on a basis of the eight-hour day.

Under the manual block the train dispatching was by written train orders sent by telegraph. The division was divided into two dispatchers' districts with two men for each district, or four men for the division for each of the three eight-hour tricks, or 12 men for the 24 hours, in addition to two chief train dispatchers.

The block signals did not "supersede the superiority of trains." Trains were required to have train orders to pass or run ahead of other trains and extra trains required running orders.

Delays under the manual block were due to—

(a) Long block sections. Trains could not follow each other under close headway, thus causing serious delays; i. e., a freight train waiting on a passing siding could not follow a passenger train until the passenger train had cleared the block three or more miles in length. And again these blocks often included a station stop for the local passenger train.

(b) Blocks of irregular length were another source of delay. A point often overlooked is that the longest block section *in time* determines the headway between trains for the entire division.

(c) Time lost by trains operating under *written* train orders, the trains being required to either slow down or stop to receive them; i. e., an extra train running ahead of a regular train could not continue on the main track on the time of the regular train without a written train order, although the regular train might be an hour or more late. The delivery of the train order required the extra to slow down to receive it. This illustrates one of the weak points of the written train order, as in the foregoing case the moving train is brought almost to a stop for the sole purpose of receiving instructions permitting it to keep in motion.

Automatic block signals were put in service on the Susquehanna division on December 17, 1910. Up to the date of this installation progress in equipping the Erie with automatic block signals had not been rapid as only 124.8 miles of road were signalled. The marked increase from 124.8 miles on January 1, 1910, to 1,018.1 miles on January 1, 1917, can be accounted for by the improvement in train

Automatic Block and Train Order Signals at Tioga Center

operation on the Susquehanna division for which full credit was given the automatic block signals.

The several divisions were equipped with 298 automatic signals, controlling 296 blocks of an average length of 4,959 ft. The signals are of the one-arm, three-position upper quadrant type, electrically operated by storage batteries. The signals are controlled by polarized track circuits.

Power-Operated Train Order Signals

The old style train order signals were replaced with three-position signals electrically operated, and as these signals marked a departure in the use of train order signals a full description will be of interest. The three-position train order signal is an electric motor signal on the mast with the automatic block signal; the number now in use is 42 (1918), all located at passing sidings or crossovers, indicated on the diagram by the letters TTO. The control of these signals is from the nearest day and night train order office, thus

making it possible for the train dispatcher to direct the operation of these signals by telephone instructions to the offices controlling them. For example, the train order office at Waverly (W) controls three signals, the train order signal at JT siding 5½ miles west and the train order signals at XY siding two miles east and at BT crossover 5½ miles east.

Another drawing illustrates a typical passing siding, showing the automatic block signals, telephone train order signals and telephones. The telephone train order signals are the lower arms of the automatic signals 280-1 and 280-2. Signal 280-1 upper arm, which is the block signal, indicates "Proceed," and the lower arm, the train order signal, indicates "Proceed regardless of following superior train until otherwise ordered." Signal 280-2 upper arm (the block signal) indicates "Stop," and the lower arm (train order signal) indicates "Take Siding."

Circuits for Train Order Signals

The circuits controlling the train order signal require the block signal (upper arm) to be in the "Stop" position whenever the train order signal is moved to either the 45-deg. or the "Stop" position. The block signal in the "Stop" position sets the first block signal 281-2 in the rear to the caution position. This arrangement of the circuits insures the display of the caution block signal approaching the train order signal, whenever the train order signal is either at the 45-deg. or "Stop" position. This is in accordance with the best practice, as it provides a distant or approach indication for each train order signal. The circuit controlling the train order signal is a polarized one over a single line wire with common return between the signal and train order office.

These three-position train order signals are in use at 13 blind passing sidings and 7 blind crossovers, and provide a satisfactory method of directing train movements at points where no signalmen are on duty. Blind sidings as usually operated are provided with telephones only, a method only partially satisfactory from a train operation standpoint, as without the signals no means is provided at the siding to indicate to the train that it should either continue on the main track or take the siding. With three-position signals at the blind siding, electrically controlled from the nearest train order office, which may be one or more miles away, it is a simple matter for the train dispatcher to display at the blind siding the required signal indication for directing the train movement to be made at the siding. Trains at the blind siding either continue on main track or take siding, as required by the signal indication of the train order signal. If they enter the siding they report by telephone to the office from which the train order signal is controlled.

The installation of the automatic block signals was completed in a little over twelve months' time from the date that the work was authorized by the railroad company. A train dispatcher's circuit with telephones in all train order offices was installed, also local circuits from each train order office to the adjacent blind passing sidings and blind crossovers.

Changes in Train Operation

Train dispatching methods were changed following the installation of automatic block and three-position train order signals in order to secure the full advantages of train operation made possible under the improved signal system. With the installation of the telephone train dispatcher's circuit the use of the telegraph train dispatcher's circuit was abandoned. With the three-position train order signals, signal indications for directing train movements largely replaced the directing of train movements by written train orders. With the automatic block, safety and facility in operation were both increased.

The Susquehanna division is divided into two train dispatchers' districts—Susquehanna to Elmira (81.2 miles) and Elmira to Hornell (58.5 miles). There is one dispatcher for each district, requiring two men for each eight-hour trick, or six men in all, for the 24 hours, with two chief train dispatchers, one on day and one on night duty. The train dispatcher's office is at Hornell.

The train dispatcher's telephone circuit provides telephones at all train order offices. In addition, local telephone circuits are provided between the telephone train order signals at blind passing sidings and blind crossovers and the train order offices from which these signals are controlled. There is a total of 133 telephones on the main and local circuits. The telephones at the train order signals are housed in concrete booths.

For emergency use in communicating with trains that may be stopped at points distant from a fixed telephone every train is provided with a portable telephone set with fish pole attachment for cutting in on the telephone circuit. The telephone wires are easily identified by a white square painted on the crossover arms under the two telephone wires on every fifth pole.

There are 17 train order offices open day and night. At 11 interlocking towers, the interlocking signals are used as train order signals; at 20 blind passing sidings and blind crossovers telephone train order signals are located, controlled from the nearest day and night train order office; at three stations two-position train order signals are operated. This makes a total of 34 locations at which train order signals are operated.

Rules for the movement of trains by signal indications given by the train order signals are few and simple.

"Telephone train order signal rules:

"(A) Arm horizontal. Red light at night. Indication: Stop on main track and consult dispatcher on telephone.

"(B) Arm inclined 45-deg. above horizontal. Yellow light at night. Indication: Take siding and consult dispatcher on telephone when clear of main track. Passenger trains will report before pulling in siding.

"(C) Arm inclined 90 deg. above horizontal. Green light at night. Indication: Proceed regardless of following preferred trains until otherwise directed by dispatcher.

"It is forbidden for trains to accept the proceed indication, Paragraph 'C,' if there is any known cause that will prevent them from making their usual running time. In such an event they will consult immediately with the dispatcher. When a train accepts the proceed indication, paragraph 'C,' and for any cause is unable to make its usual running time, it must protect itself against the following preferred train according to Rule 99, operating department.

"It is forbidden to use a crossover at any point where a telephone train order signal is located without permission from the dispatcher.

"(D) When trains approach interlocking points with insufficient time to clear the schedule of a superior train at the next passing point, the whistle must be sounded for the siding, and if proceed signals are displayed, trains will proceed in accordance with Paragraph 'C'."

The three indications of the train order signal—"Proceed on main track," "Take siding" and "Stop for instructions"—are unmistakable. The issue of written train orders is the exception. Under the method of operating by the signal indications of the train order signal there is no need for the use of the following Standard Code train order forms:

Form B—"Directing a train to pass or run ahead of another train." This information is given entirely by the train order signal directing the train to "proceed on main track" or "take siding" as required.

Form D-E—"Time Orders." Under the method of operating trains by signal indication the issue of time orders is not necessary.

Form G—"Extra Trains." Train orders are not required, as under time table rule B "extra trains will start from their initial point and proceed on double track without running orders."

Form J—"Holding Order." Not used, as train order signal in stop position takes its place.

The following train order forms of the Standard Code are still in use, as the information covered by them cannot be given by signal indication:

Form F—"For Sections."
Form D-H—"Work Extra."
Form K—"Annulling a Schedule or a Section."
Form L—"Annulling an Order."
Form D-M—"Annulling Part of an Order."
Form D-P—"Superseding an Order or Part of an Order."

Signal 235-1 at W. B. Passing Siding L R

For movements against the current of traffic or for the use of a section of a double track as single track Forms D-R and D-S are used.

Train Movements

The extensive use of the telephone makes it possible for the dispatcher to keep a close supervision over the movement of every train. There are four methods of reporting trains:

(a) By telephone train reports (OS) from the 17 day and night train order offices. The distance between these offices averages 8.7 miles.

(b) By telephone reports from trains taking siding or, if a passenger train, about to take siding.

(c) By telephone reports from trains stopped in answer to train order signals in "Stop" position.

(d) By telephone reports from trains using emergency telephone outfits at other than fixed telephone locations.

The dispatcher directs train movements of extra trains or schedule trains running late by sending telephone instructions to the signalmen at the 17 train order offices. These instructions direct the signalmen to place the train order signal either in a 90-deg., 45-deg. or "Stop" position. If the signal is at an interlocking tower, the signalman places the interlocking signal used as a train order signal in the position directed. If the signal is at a blind passing siding or blind crossover, the signalman at the train order office places the signal in the position directed by operating the three-position switch controlling the signal.

The dispatcher makes no written record of the train movement authorized by him until after the train has acted upon the instructions of the train order signal. For example, if the dispatcher instructs a train order office by telephone to set "train order signal at 45 deg." at a blind siding for an extra train to "take siding," the entry is made on the train sheet after the extra takes the siding and the conductor has reported over the telephone that the movement has been made as directed.

There is a marked difference in the simplicity of this method of directing a train movement by signal indication as compared to the written train order method. Under the written train order method the dispatcher would have issued a Form B order, the signalman would have been required to deliver the order to the train, the train would have had to slow down to receive it and finally after the train had made the movement, as required, the conductor would have had to telephone the completion of the movement. Under the method of train orders by signal indication, the dispatcher, with a few words over the telephone, would direct the train order office to display the required train order signal and the signal would be displayed *at the point where the train is required to act upon it.* The train would not be required to slow down simply to receive instructions, as the instructions are conveyed to the train by the unmistakable indication of the train order signal. And, further, these instructions are given to the train at the point where the train is required to act upon them and not at some distant point, as is so often the case under the written train order system.

As a further example of the two methods, take the case of an extra train to be run ahead of a scheduled train running late. Under the written method a "19" order would be issued and the train would be required to slow down to receive the instructions directing it to continue on main track, the slowing down of the train defeating in a measure the very purpose for which the instructions are issued. Under the signal indication method the train order signal in the 90-deg. position will instruct the train to continue on the main track and the train will not be required to lose any time by slowing down to receive these instructions.

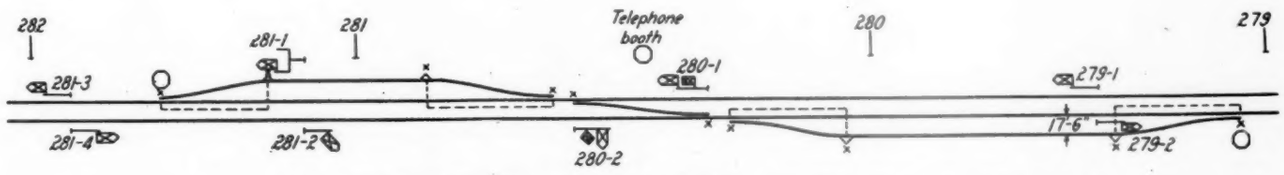


Diagram Showing Blind Siding and Typical Arrangement of Signals

The installation of automatic block signals on the Susquehanna division, together with the three-position train order signal and telephone train dispatching, resulted in the maximum protection for train movements by the automatic

block signals, and the three-position train order signal with the telephone train dispatching system furnish the train dispatcher with an efficient means for directing train movements by signal indication.

Results

The improved results in train operation under automatic block signals were as follows:

Delays to freight trains due to the manual block were practically eliminated. The train load was increased and, although the speed was slower than formerly, less time was consumed in passing over the division. The average time for freight trains to cover the division—139.7 miles—was:

Under manual block.....10 hours 29 minutes
Under automatic block..... 8 hours 49 minutes
Difference ..... 1 hour 40 minutes

Or a saving in time of 15 per cent.

The total saving in train operation is shown in Table I, compiled from data furnished by the railroad company through the superintendent's office of the Susquehanna division. This estimated saving of $87,969 is equal to the interest on an investment of $1,759,380.

The improved results in train operation more than justified the installation of this system of automatic block and train order signals. The success of the system was due to the fact that it provided an effective method of operating trains by signal indication.

Erie Railroad
Susquehanna Division

	Manual block	Automatic block
Block stations, number of		
Block (only)	18	None
Interlocking and block	28	None
Total	46	None
Interlocking stations (only)	None	11
Block sections, number of		
Day and night	90	296
Block section lengths		
Minimum miles	.39	...
Maximum miles	7.27	...
Average	3.07	0.94
Block signalmen		
All telegraph operators	136	...
Telephone and telegraph operators	...	58
Wages per year	*$94,752	$55,176
Average per man	696.70	919.60
Train order offices		
At block stations	18	None
At interlocking stations	28	11
At passenger stations	4	6
Total	50	17
Train order signals		
At block stations	36	None
At interlocking stations		
Interlocking signals used also as train order signals	56	22
At passenger stations	2	6
At blind sidings and crossovers	None	†40
Total	94	68
Train dispatcher's force		
Dispatchers	12	6
Chief dispatchers	2	2
Total	14	8

*Total is computed on basis of eight hours per day for comparison with total under automatic block.
†Ten put in service in 1918.

Table I—Results of Freight Train Operation on the Susquehanna Division—Erie Railroad

For Months of December, 1909, to November, 1910, Under Manual Block
Compared with Months of December, 1910, to November, 1911, Under Automatic Block

Months	Ton miles: 1909-10 Manual block	Ton miles: 1910-11 Automatic block	Ton miles per train: 1909-10 Manual block	Ton miles per train: 1909-10 Manual block (Corrected) (See Note a)	Ton miles per train: 1910-11 Automatic block	Reductions a/c temperature: 1909-10 (See Note b)	Reductions a/c temperature: 1910-11	Reductions a/c temperature:	Freight trains: 1909-10	Freight trains: 1909-10 Manual block (Corrected) (See Note c)	Freight trains: 1910-11 Automatic block	Saving in freight trains	Saving in train operation
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(k)	(l)	(m)	(n)	(o)
December	173,387,082	177,605,807	227,542	217,757	228,285	8.5	12.8	+4.3	762	811	778	33	$4,511
January	162,944,115	194,134,250	224,750	232,392	251,795	12.4	9.0	—3.4	725	835	771	64	7,401
February	154,443,876	180,987,865	225,136	231,215	252,072	12.0	9.3	—2.7	686	782	718	64	7,629
March	199,235,797	178,197,673	247,497	239,577	244,106	6.0	9.2	+3.2	805	744	730	14	4,284
April	131,246,585	168,295,833	245,320	241,640	256,548	2.2	3.7	+1.5	535	696.5	656	40.5	6,512
May	170,527,993	189,061,368	268,548	268,348	276,002	0.0	0.0	0.0	635	704	685	19	4,931
June	160,521,776	202,898,946	250,815	250,815	293,206	0.0	0.0	0.0	640	809	692	117	11,944
July	189,088,090	207,184,154	271,289	271,289	298,106	0.0	0.0	0.0	697	764	695	69	8,242
August	195,734,433	203,503,501	297,921	297,921	302,832	0.0	0.0	0.0	657	683	672	11	3,834
September	195,588,923	189,772,505	273,550	273,550	296,057	0.0	0.0	0.0	715	694	641	53	7,041
October	210,030,355	221,607,785	260,583	260,583	308,216	0.0	0.0	0.0	806	850	719	131	12,765
November	195,119,249	208,820,764	267,653	263,370	293,700	3.7	5.3	+1.6	729	792.9	711	81.9	8,875
	2,137,868,274	2,322,070,451	254,751 (Average)	254,054 (Average)	274,217 (Average)	44.8	49.3	+4.5	8,392	9,165.4	8,468	697.4	$87,969

Note.—(a) The "Ton miles per train" under manual block (corrected Col. e.) are the totals for 1909-10 corrected by the difference in temperature of the winter months of the two years in order to place the totals for the two years on an equal basis in respect to weather conditions.

(b) The "Reduction on account of temperature" (Cols. g and h) are the percentages by which the monthly ton mile totals were reduced on account of low temperatures. These percentages were used to arrive at the totals under manual block (corrected).

(c) The "Freight trains" manual block (corrected Col. 1) were computed by dividing the "Ton miles per train" manual block (corrected Col. e) into the ton miles per month moved under the automatic block (Col. c). The results (Col. 1) show the number of trains that would have been required to move the traffic that was moved under automatic block if the trains had been operated on the manual block basis.

British Official Photograph. Copyright by Underwood & Underwood, N. Y.

Loading Shells on a Light Railway Train

Doings of the United States Railroad Administration

Nearly Two Thousand Short Line Railroads Relinquished; Advances Made to Several Roads

WASHINGTON, D. C.

ANOTHER SEPARATION of the sheep from the goats was announced by the Railroad Administration on June 29, when it relinquished from federal control nearly 2,000 short line railroads whose control by the Administration is regarded as not "needful or desirable." This leaves within the scope of federal management only the lines or systems as to which it has been affirmatively decided that it is needful and desirable that they shall be under federal control. The previous separation referred to affected the railroad executives and officers, who by various processes have been divided into the two groups of representatives of the railroad corporations and the operating officers (using the term operating in a broad sense) responsible solely to the Railroad Administration. The relinquishment of the short lines was accomplished with the approval of President Wilson by sending them official notices only a few hours before the Senate and House had passed a resolution requested by Director General McAdoo extending from July 1 to January 1 the time within which railroads might be released, but with an amendment intended to prevent leaving the short lines out of the fold unless competing and connecting lines were relinquished at the same time. This amendment was proposed by the short lines and opposed by the Railroad Administration, which was obliged to act quickly in disposing of the short lines because unless Congress passed the resolution by July 1 it had to release such lines as it wished to release before midnight Saturday and if the resolution had been passed with the amendment it would have been impossible to release any considerable number of roads unless it released all.

The decision as to which lines should be relinquished was made so quickly after it seemed apparent that Congress would not pass the resolution extending the time that no list of the railroads retained or given up has yet been given out. It is understood that the lines retained include about 185 railroads or systems included by the Interstate Commerce Commission in Class I, which means roads having operating revenues of over $1,000,000 a year, short lines subsidiary to those systems, and most of the 221 switching and terminal companies, making a total of about 230,000 miles, while the roads relinquished include about 1,400 plant facility roads, many of which had previously been released at their own request, and between 300 and 400 of the 765 so-called short lines, which include roads dependent on the larger systems for through connections.

The Railroad Administration's statement was as follows:

"Under the act of March 21, 1918, it becomes necessary for the United States Railroad Administration, prior to July 1, 1918, to exercise the responsibility, created by Section 14 of that Act, of determining what railroads or parts of railroads it is not needful or desirable shall continue under federal control.

"So far as it has been practicable, in such a complicated matter, to develop the facts up to the present time, it has become apparent that there are large numbers of the shorter railroads whose federal control is not needful or desirable.

"The Railroad Administration has therefore provided that all such railroads be relinquished, except in cases where it has already been ascertained that it is needful and desirable that such railroads shall be under federal control.

"In taking this action the Railroad Administration is mindful of the paramount importance of preserving unimpaired the local public service performed by the railroads which may thus be relinquished and is also solicitous that no injustice shall be done to the owners of such railroads. It may be that the creation of federal control over railroad systems in general will tend to change unfavorably the situation of many of these smaller railroads, unless special care shall be taken to avoid such unfavorable results, with consequences detrimental both to the local public service and to the just interests of the railroad owners.

"To avoid these consequences and to preserve in every reasonable respect a status for the railroads so relinquished as favorable as that which they enjoyed during the three-year test period (the three years ended June 30, 1917), great care will be taken to see that the railroads so relinquished are given fair divisions of joint rates, are insured a reasonable car supply—circumstances considered—and are protected against any undue disturbance in the routing of traffic.

"In order to make sure that a continuing study and supervision shall be provided for the carrying out of the policy thus outlined, there will be created at once in the Railroad Administration's Division of Public Service and Accounting a Short Line Railroad Section, the manager of which will be charged with the special duty of ascertaining what is necessary in order to give as to these matters reasonable protection to the railroads relinquished.

"It may be that instances will appear where federal control of railroads now relinquished is in fact needful or desirable. In such cases there will be no hesitation in taking the action necessary to put such railroads under federal control.

"In general, it is the definite policy of the Railroad Administration to see that all short line railroads receive fair and considerate treatment."

To this was appended a signed statement by President Wilson:

"I approve the above policy and announcement."

As indicated in the statement, the notices mailed to the railroads relinquished contained a statement that some of the roads might be returned to federal control if the owners and the government could agree on a contract for compensation, and it is understood that one of the motives for releasing many of the roads was the fact that the government would be in a position to dictate the terms of a contract with much less difficulty with a railroad which had been relinquished than with one which had been definitely taken over. In many cases the roads had a deficit instead of a net operating income for the three test years 1915, 1916 and 1917, but insisted on a basis of compensation which would provide for the interest on funded indebtedness or receivers' certificates. In such cases the administration is willing to take over certain roads provided it can do so without any guarantee. For this reason any list of relinquished roads at present is regarded as provisional and subject to change.

The division of law of the Railroad Administration has been conferring with representatives of the short lines for a long time and in a number of cases has relinquished roads at their own request. The short line railroads originally took the position that they had already been taken over by the President's proclamation of last December, but the administration met this point by saying it had not exercised jurisdiction over many of the lines. When the negotiations with the roads that declared they would be ruined unless taken over but which had larger ideas of what the compensation should be than the representatives of the Railroad Administration, became protracted without a settlement, the

Railroad Administration asked Congress for the extension of time and the joint resolution for that purpose was introduced on June 12. The short lines then asked for the amendment which was adopted to prevent the relinquishment of one line without its competitors and connections.

The amendment to the resolution as passed by both Houses was as follows: "Provided, however, That the right conferred upon the President to relinquish prior to July 1, 1918, control of all or any part of any railroad or system of transportation without consent of the carrier as provided in section 14 of an act approved March 21, 1918, . . . which right is herein extended to and inclusive of January 1, 1919, shall not be construed to include any railroad engaged as a common carrier in general transportation such as mentioned in section 1 of said act not owned, controlled or operated by another carrier company and which has heretofore competed for traffic with any railroad or railroads of which the President has taken and retained the possession, use, and control; it being the intent of Congress that every railroad not owned, controlled, or operated by another carrier company and which has heretofore competed for traffic with a railroad or railroads which the President has taken and retains the possession, use, or control, or which connects with such railroad and is engaged as a common carrier in general transportation, shall be held and considered as within federal control as defined in said act, and to be entitled to the benefits of all the provisions of said act so long as the railroad or railroads with which it has heretofore competed for traffic or with which it connects shall be retained under federal control."

To this was added another amendment proposed by Senator Cummins to provide that it should not include street railways or interurban or similar roads which do not receive at least 25 per cent of their operating revenue from the transportation of freight. There was little debate in the Senate, although Senator Kellogg announced that he would oppose the amendment because he was not willing to force the government to take over all short lines whether they are useful to the government or not. Senator Penrose said that as he understood it the government is diverting traffic to government-controlled railroads and "practically leaves the competing short lines in a condition with no freight, no income, no credit, and the sheriff approaching them." Senator Curtis proposed another amendment, but finally withdrew it, stating that he understood the joint resolution had already been engrossed ready to sign and that any further amendment would delay its passage.

In the House there was more debate and considerable sympathy was expressed over the condition of the short line railroads. Stress was also laid on the fact that Congress had declared its intention of requiring the retention of the short lines when it inserted in the railroad control act in Section 1 the provision that "every railroad not owned, controlled or operated by another carrier company and which has heretofore competed for traffic with a railroad or railroads, of which the President has taken the possession, use and control, or which connects with such railroads and is engaged as a common carrier in general transportation, shall be held and considered as within federal control," although it had added in Section 14 a provision allowing the President to relinquish railroads before July 1.

Chairman Sims of the House Committee on Interstate and Foreign Commerce, in explaining the purpose of the Railroad Administration, said it felt that it ought to relinquish all railroads that are not necessary for war purposes and that it had asked further time to consider each individual case and to try, if possible, to have a contract in every case so as not to have to resort to the courts. He also said that if the lines are kept by force of law within government control the lines will have the whip hand of the administration in making the contracts. He quoted General Counsel Payne of the Railroad Administration as stating that to retain all the short line railroads would cost the government approximately $20,000,000 per annum. On the other hand, he quoted the representatives of the short line railroads as saying that their earnings were reduced in some cases 50 per cent by the diverting of freight to government-controlled lines.

Representative Esch, in supporting the amendment, said that there are about 750 short line railroads involved, covering 30,000 miles of trackage and with a capitalization of $2,000,000,000, whereas only about 40 of the short lines have been released upon their own request.

Railroad Administration Advances to Railroads

The Railroad Administration has advanced $160,509,000 to railroads since the government assumed control of the lines, of which $36,195,000 was advanced during the month of June, according to the monthly statement issued by John Skelton Williams, director of the division of finance and purchases. Of the total amount $18,745,000 was derived from surplus balances of certain railroads and $141,764,000 from the revolving fund. An accompanying statement said that owing to improved money conditions and better earnings the railroads are showing increased ability to provide for their own financial requirements, both in the matter of meeting maturing bond issues and in securing additions to their property.

The advances made to carriers during the months of April, May and June have been as follows:

	Treasury fund	Railroad funds	Total
New York, New Haven & Hartford	$46,964,000	.....	$46,964,000
Baltimore & Ohio	4,000,000	$5,000,000	9,000,000
New York Central Lines	29,500,000	5,500,000	35,000,000
Pennsylvania Railroad	23,000,000	2,000,000	25,000,000
Buffalo, Rochester & Pittsburgh	.....	600,000	600,000
Detroit, Toledo & Ironton	.....	200,000	200,000
Chicago, Indianapolis & Louisville	500,000	500,000	1,000,000
Chicago, Rock Island & Pacific	3,000,000	.....	3,000,000
Minneapolis & St. Louis	750,000	.....	750,000
Wabash	1,300,000	.....	1,300,000
Erie	7,500,000	.....	7,500,000
Ann Arbor	.....	200,000	200,000
Illinois Central	7,750,000	.....	7,750,000
Denver & Rio Grande	.....	2,700,000	2,700,000
Chicago, Milwaukee & St. Paul	9,000,000	.....	9,000,000
Chesapeake & Ohio	2,000,000	.....	2,000,000
Delaware & Hudson	2,000,000	.....	2,000,000
Chicago, Burlington & Quincy	1,500,000	.....	1,500,000
Seaboard Air Line	1,000,000	.....	1,000,000
Southern Pacific Company	2,000,000	.....	2,000,000
Illinois Southern	.....	160,000	160,000
Norfolk Southern	.....	350,000	350,000
Hocking Valley	.....	500,000	500,000
Central Vermont	.....	285,000	285,000
St. Louis-San Francisco	.....	750,000	750,000
Total	$141,764,000	$18,745,000	$160,509,000
Of the above amount ($160,509,000) was paid on account of compensation, as follows:			$40,460,000
New York Central Lines		$16,000,000	
Wabash		1,300,000	
Ann Arbor		75,000	
Denver & Rio Grande		2,700,000	
Erie		4,500,000	
Chicago, Milwaukee & St. Paul		4,000,000	
Pennsylvania Railroad		5,000,000	
Delaware & Hudson		2,000,000	
Chicago, Burlington & Quincy		1,500,000	
Southern Pacific Company		2,000,000	
Norfolk Southern		350,000	
Central Vermont		285,000	
St. Louis-San Francisco		750,000	
			$40,460,000
The remaining amount was loaned on demand at 6 per cent per annum interest, secured by collateral, except—			$120,049,000
New York, New Haven & Hartford note was for one year at 6 per cent, secured by collateral, with the right of renewal for another year		$43,964,000	
and an unsecured demand note for		3,000,000	
Baltimore & Ohio, unsecured demand note for		4,000,000	
Hocking Valley, unsecured demand note for		500,000	
		$51,464,000	

Progress in Contract Negotiations Slacken

Oral arguments as to whether the operating expense accounts of the carriers as reported by the Interstate Commerce Commission shall be recast by the Interstate Commerce Commission before issuing certificates of the net operating income for 1915, 1916 and 1917 as the basis for compensation

Federal Managers and General Managers

A. Robertson
Federal Manager, Missouri Pacific

E. T. Lamb
Federal Manager, Atlanta, Birmingham & Atlantic

W. L. Mapother
Federal Manager, Louisville & Nashville

W. J. Jackson
Federal Manager, Chicago & Eastern Illinois

LeRoy Kramer
Federal Manager, St. Louis-San Francisco and Missouri, Kansas & Texas Lines North of Texas

C. G. Burnham
Federal Manager, Chicago, Burlington & Quincy

J. E. Gorman
Federal Manager, Chicago, Rock Island & Pacific

W. B. Scott
Federal Manager, Southern Pacific Lines in Texas and Louisiana

W. A. McGonagle
Federal General Manager, Duluth, Missabe & Northern

under federal control were heard by the full membership of the commission at Washington beginning on Monday. A. P. Thom, counsel for the Railway Executives' Advisory Committee, argued that the accounts should be used except for corrections for erroneous computation, violations of the accounting rules and the deduction of war taxes which were accrued and which the law requires shall be paid by the companies from their compensation. Clifford Thorne presented an opposing argument. Accounting officers also presented reasons why accounts should not be recast, saying this should not be done for taxes and wages unless it was done for all items, which would be practically a physical impossibility.

Progress on the negotiations over the standard compensation contract was delayed somewhat by the necessity of dealing with the short line situation, but there are still differences of opinion regarding the extent to which the Administration shall control the expenditure of the amounts paid to the companies for compensation, the interest rate on investments in improvements and particularly regarding the effort of the administration to insert a provision by which the companies would waive all right to claim damages for destruction of business by diversion of traffic during federal control. The representatives of the security holders are especially opposed to such a provision and have threatened to refuse to ratify a contract representing some of the views expressed by the Administration representatives.

A contract between the Railroad Administration and the Kansas City, Mexico & Orient has been signed on the basis mentioned in last week's issue, which provides for the payment of $150,000 a year and an equal division between the company and the government of net operating income above that amount, with the option that this may be commuted to $350,000 after six months at the desire of the government.

Payment of Freight Bills

C. A. Prouty, director of the division of public service and accounting, has issued a circular giving interpretations of the general order placing transportation charges on a cash basis, as follows:

Numerous objections have been filed to Order No. 25 and in consequence I have held several conferences with shippers and railroad accounting officers with a view to determining the practical questions involved in the enforcement of that order. As a result of these conferences I am not satisfied that any change should be made in the order, but it is apparent that further explanation of the application of the same is necessary.

1. A railroad has a lien upon the property for its freight charges; that is, it may demand payment of the freight money as a condition precedent to the delivery of the property. This right should never be waived if there is a reasonable possibility that the carrier will thereby lose its freight money. This must be read into and considered as a part of whatever is said in this circular. To what extent payment before delivery will be insisted upon is usually a local question and must be left largely to the discretion of the individual carrier.

2. While the carrier must protect itself in cases where such protection is necessary, it should also treat shippers or consignees in a business way. The majority of shippers or consignees in the past have paid their freight when they received their goods and that practice should be continued for the future. In many instances with regular customers there is no necessary connection between the delivery of the freight and the presentation and payment of the freight bill; that is, the freight will be delivered to one person at one time and the bill presented to and collected from some other person at some other time. It is not the intent of this order to interrupt reasonable arrangements of that sort which do not involve the granting of a period of credit, but simply to put the transaction upon a cash basis.

Assume, for example, that freight is delivered to such regular customer on Monday and that the freight bill is mailed or delivered on the same day to the shipper or consignee, being received by him in due course upon the morning of the next day. If, now, the shipper or consignee remits his check for the amount during Tuesday so that it may be received by the carrier the morning of Wednesday, that is to be treated as a cash transaction. The bill is presented and paid in due course of business and no period of credit in the ordinary acceptation of that term is given.

This might in fact allow one day for the examination and correction of the freight bill, but that would not be the purpose of the transaction. In such case no bond will be required.

3. If in a particular case it is in the opinion of the carrier necessary or in the interest of economy that a period of two days in addition to that above prescribed should be allowed, this may be done upon the filing of the necessary bond. The check in this case should be mailed or payment made on Thursday.

4. Any plan may be adopted for the payment of these freight charges which is equivalent to a cash transaction. Take, for example, the movement of ore from the mine to the dock at the head of the lakes. The ore is weighed at the dock and the consignee has no representative there who can conveniently pay the freight. At the present time, in some instances at least, the railroad agent draws a sight draft upon the consignee, attaching the freight bills. Subsequently these freight bills are checked by the consignee, a statement of alleged errors transmitted to the carrier, which, if found correct, is taken account of in the drawing of subsequent drafts. The draft is always honored. This and similar practices are treated as cash payments. No bond is required in this case, but failure to honor a draft would automatically cancel the arrangement.

5. In many cases at the present time the shipper or consignee corrects his freight bill before paying the same, and pays, not the bill as rendered, but the bill as corrected. There is no objection to a continuance of this practice provided that the shipper or consignee does not abuse it, but proceeds in good faith with a revision of the bill both for undercharges and overcharges. The change should be made in red ink and the tariff authority for the change indicated upon the bill. The carrier should at once check the correctness of the change. If found correct, the transaction is ended; if not correct, the bill should be at once returned to the shipper or consignee with a statement of the amount the collection of which will be insisted upon, in which case this amount must be paid.

It will be understood that all this refers to questions of rates arising out of the interpretation of the tariff. Any question of loss and damage, shortage in shipment, etc., is an entirely different matter which must be settled through the regular channel.

The above will serve as illustrations of the many questions which may arise. In disposing of these questions, railroad officers must remember that we are in fact the servants of the public and that it should be our earnest and honest effort to administer our duty in the public interest. They should attempt in all cases to get at the viewpoint of the shipper or consignee and to work out some co-operative arrangement under which the best results for all parties can be attained. I am satisfied that if shippers or consignees and carriers approach the application of this order in that spirit, it will be found possible to comply with it without undue hardship. All parties must remember that these are abnormal times and allow something on that account.

In order that working arrangements may be fully consummated before the order goes into force, the effective date has been postponed until August 1, 1918. In all doubtful cases the matter should be at once taken up between the carrier and the shipper or consignee. Either party may consult this office

where a doubtful principle is involved, but it is my desire that these questions be worked out locally in all cases. Both carrier and shipper or consignee will understand that the mass of detail cannot be disposed of here.

Accounting Circular

Director Prouty of the division of public service and accounting has issued a circular stating that in order to obtain uniform results it has been decided that the provisions of general order No. 17 requiring the carriers to open new accounts called federal books, apply with equal force to all carriers under federal control, whether in receivership or otherwise. It is, therefore, necessary on the part of accounting officers or carriers in receivership to see that the provisions of the order are complied with and that new books are opened as of January 1, 1918. All assets collected and all liabilities paid subsequent to December 31, 1917, which were collectible or payable on or prior to that date are to be accounted for to or from the receivership or the corporation depending upon whether the assets collected or the liabilities paid are for account of the receiver or the corporation. The separate books of account are to be continued during the period of federal control, notwithstanding the receivership may be terminated before that time.

Consolidated Classification Completed

The work of combining the Official, Western and Southern Classifications into one volume, uniform as to rules, descriptions, carload minima, etc., and with three columns of ratings —one for each of the three classification territories, has been completed and the proposed Consolidated Classification No. 1 has been compiled and submitted to the Interstate Commerce Commission for consideration and for public hearing.

Under the three separate classifications it was often the case that a shipment moving through two territories was subjected to different rules on the different parts of its journey and a shipper, say, from an eastern point to a point west of the Mississippi River was required not only to be familiar with the rules and descriptions applying east of the river but the possible different ones west of the river and was compelled, moreover, to refer to two distinct classifications in order to ascertain his through rating.

These difficulties will disappear when the new Consolidated Classification becomes effective and it will only be necessary for a shipper to consult one volume while the only territorial variation will be in the rate, which can easily be located.

The work of unifying the three classifications has been going on for several years under the direction of the Uniform Classification Committee, which has been endeavoring to establish uniformity as to rules, descriptions, minima, etc., without attempting to effect uniformity of rating. Shortly after the Railroad Administration was formed, Director General McAdoo appointed a committee composed of the chairmen of the three territorial classification committees and of the Uniform Classification Committee and a representative of the Interstate Commerce Commission to hurry up the work, and the book is now ready for publication, subject to any changes that may be deemed necessary or advisable after public hearing In the consolidated classification, in addition to the work which the uniform committee has been carrying on, a greater degree of uniformity in ratings has also been provided than previously existed, and this has led to a considerable number of increased ratings. There was a greater degree of uniformity between the official and western classifications than between them and the southern and, as a result, in the consolidated classification there is a much greater number of increases than of decreases in the Southern territory, while in the eastern and western territories it is stated that the number of increases and decreases is about equal. The Interstate Commerce Commission on June 27 ordered a proceeding of inquiry and investigation by the commission on its own motion concerning the reasonableness and propriety of the descriptions, rules, regulations, rating and minimum weights provided in the classification, except the rules and regulations governing the transportation of explosives and other dangerous articles. The proceeding was assigned for hearing before Examiner Disque at the places and on the dates following: Boston, Mass, August 1; New York, N. Y., August 5; Chicago, Ill., August 12; Omaha, Neb., August 19; Portland, Ore., August 26; San Francisco, Cal., August 30; Denver, Colo., September 5; Fort Worth, Tex., September 9; New Orleans, La., September 13, and Atlanta, Ga., September 19. All carriers subject to the act to regulate commerce and which are not under federal control were also made respondents with a view to prescribing reasonable and appropriate classification in consolidated form for their use.

Information as to Labor Conditions

The Board of Railroad Wages and Working Conditions has issued a questionnaire to the railroads through the regional directors, requesting information regarding labor conditions on the different railroads, as follows:

1. What is your normal summer force of common labor?
   (a) Section labor.
   (b) Extra track maintenance gangs.
   (c) Track construction gangs.
   (d) Bridge department.
   (e) Building department,
   (f) Water supply and fuel department.
   (g) Signal department.
   (h) Other branches of service (specifying).
2. What total force in each of the above should you have quickly to enable you to get the property in normal shape for present or winter service?
3. Do you employ common labor by the day or by the hour; specify hours per basic day?
4. Give range of pay per hour, approximate number employed at each rate, and reason for any differential that may have existed in December, 1915, or exists today.
5. Give approximate corresponding rates paid in other industries in that proximity.
6. At what rate is overtime paid for night work, Sundays and holidays as of this date?
7. What proportion of this force are paid on the piece work basis?
8. What was the rate per basic day or hour for piece workers prior to January 1, 1918?
9. What was the average, maximum, minimum and prevailing piece work hourly earning in 1917?
10. Do you recommend the continuance or introduction of piece work on track maintenance?
11. Describe conditions of supply of common labor sufficient to give comprehensive grasp of the situation.
12. What rates do you recommend be paid to obtain adequate supplies of common labor?
13. If such rates are paid will they withdraw labor from essential war industries or from non-essential industries, or will they induce itinerary labor to work?
14. What minimum differential (expressed in per cent) over usual monthly earnings of common labor should be paid for foremen?

Belnap to Devote Full Time to Safety Section

Hiram W. Belnap, who was recently appointed manager of the safety section in the Division of Operation of the Railroad Administration, has resigned, effective on July 1, his position as chief of the Bureau of Safety of the Interstate Commerce Commission, to devote his entire time to the work of the safety section. As has been described in recent issues, Mr. Belnap will supervise the building up of an effective safety organization on all of the railroads under

federal control. He had been with the Interstate Commerce Commission for 15 years, for 7 years as chief of the Bureau of Safety and for the 8 preceding years as inspector of safety appliances.

Rate Divisions Should Be Furnished

The Division of Public Service and Accounting has issued a circular stating that attention has been directed to the failure on the part of certain carriers to furnish other interested carriers with a copy of the divisions necessary to apportion interline freight revenues. These requests for divisions were to enable the destination carrier to apportion the revenues on traffic moving via usual routes in substantial volume, and the failure to supply divisions in such cases puts an unnecessary burden upon the settling carrier and necessitates the apportionment of such revenues on a mileage basis. To the end that interline freight revenues covering traffic moving in substantial volume via usual routes may be apportioned as provided in General Order No. 21, all carriers are notified that proper requests for copies of divisions should be promptly complied with, provided, however, if requests for divisions are made covering traffic moving in small volume over unusual or diverted routes, such requests should be referred back to the carrier making the application and its attention directed to the provisions of paragraph 4 of General Order No. 21.

Stockyards Railways

In reply to a Senate resolution Walker D. Hines, acting director general of railroads, has addressed a letter to the Senate stating that no action has been taken in regard to taking over as part of the Railroad Administration any of the stockyards of the country. The letter said in part:

"As to the stockyards railways, the present view of the Railroad Administration is that in general it will be in the public interest for the government not to exercise control of such railways, since they are either wholly or largely plant facilities for the stockyards service. The allowance made to such stockyards railways will however, be carefully scrutinized to see that they are not excessive. It is believed that an adequate and non-discriminatory service can be secured without federal control of these railways.

"In a few cases the stockyards railways may be so extensive and may serve so many industries, other than the stockyards and packing houses, as to make such railways an integral part of the general terminal facilities of the United States Railroad Administration and necessitate their retention in federal control. The Chicago Junction Railway, which has 220 miles of track and serves many other industries, is of this class.

"These questions at present are receiving careful study, and a specific answer as to the permanent status of these stockyards railways in respect of federal control cannot be made until the study shall be completed.

"It is believed that the Director General of Railroads has not authority under existing laws to take over stockyards. The authority under which the roads were taken over by the President is derived from the act approved August 29, 1916, and the power is limited to systems of transportation or parts thereof. The federal control act approved March 21, 1918, does not, it is believed, enlarge this power.

"No study as such has been made regarding the ownership and control of the stockyards to determine what, if any, connection such ownership and control has with the packing industries of the country. The only information which we have sought is to determine whether the terminal roads in different localities should be taken under control of the government."

SPAIN PRODUCED 5,973,300 TONS OF COAL IN 1917, 5,589,800 tons in 1916, and 4,293,100 tons in 1913.

Starting Work Quickly on the Illinois Central

IN ORDER TO BEGIN work on the construction of several important mechanical terminals at the earliest practical date after receiving notification of the approval of its budget recently, the engineering department of the Illinois Central adopted a novel and interesting expedient. The approval of all construction work was delayed so long this year as the result of the concentration of final authority in the hands of the Railroad Administration at Washington that less than the usual time remained to complete the facilities before winter. Furthermore, a large amount of work on different roads was approved at approximately the same time, leading to active competition for contractors and men.

Among the items approved on the Illinois Central were the construction of mechanical facilities at Champaign, Carbondale, Mounds and Amboy, Ill., and Fulton, Ky. In order to secure contractors for these projects before they were loaded up with other work and to hasten the completion of the work the road did not wait to complete the detailed plans for these improvements before calling for bids. An invitation was prepared in printed form and sent to a selected list of contractors, asking them to submit proposals for each of the jobs on the basis of the actual cost of labor, material and insurance, plus fixed sums or fixed unit prices (depending upon the character of the work), to cover contractors' profits, use of plant, tools and overhead expenses. The work to be done was specified in the invitation. Location and such other plans as were completed were sent with the invitations, as were also standard drawings and specifications covering the various types of buildings and facilities to be constructed. Specifications for mechanical terminals built last year at Baton Rouge, La., and at Paducah, Ky., were also included as typical of the work to be done this year. Equipped with this information, the contractors were in a position to go over the work on the ground in an intelligent manner and to submit bids on each project to cover their overhead costs and profit in either lump sums (for clearing the site, etc.), or unit prices (as for placing concrete) for as many of the 154 items listed in the invitation and as were encountered in the project under consideration. With the bids in hand the engineering department was able to award contracts with the minimum delay. In letting the work it was also endeavored to distribute it between different contractors in a manner which would lead to the earliest completion of all of the projects. Largely for this reason a different contractor was placed at each of the five points.

As a result of this method invitations for bids were sent out to contractors on receipt of authority to proceed with these projects. Contracts were awarded six days later and the contractors were at work at all of the points within a week of the time that they had received notification of the awarding of the work to them, or within 17 days of the approval of the budgets by the government. By means of this plan the double object was accomplished of awarding the contract in the minimum time while retaining the personal incentive to the contractor to do the work as expeditiously and cheaply as possible and at the same time insuring him that he was protected against increases in prices for materials and labor, while also protecting the railroad company in case there should be a lowering of prices.

JAPANESE GET CHINESE RAILWAY.—According to press despatches, Japanese interests have obtained the long-sought-for extension of the Kirin-Huilin Railway, which is to be 277 miles in length. The Japanese will advance to China 10,000,000 yen ($5,000,000), and make a similar amount available for surveys, accepting therefor 20,000,000 yen ($10,000,000) of six months' treasury bills.

Yearly Meeting of the American Concrete Institute

Abstracts of Some of the Papers Presented at the Annual Convention Held at Atlantic City

THE ANNUAL CONVENTION of the American Concrete Institute was held at the Hotel Traymore, Atlantic City, N. J., on Thursday, Friday and Saturday of last week. The session on Thursday was held jointly with the American Society for Testing Materials, when reports and papers covering the portions of the concrete field occupied by the Society and the Concrete Institute in common were presented. The following are abstracts of some of the papers presented which are of direct interest to railroad men.

Reinforced-Concrete Flat-Slab Railway Bridges

By A. B. Cohen

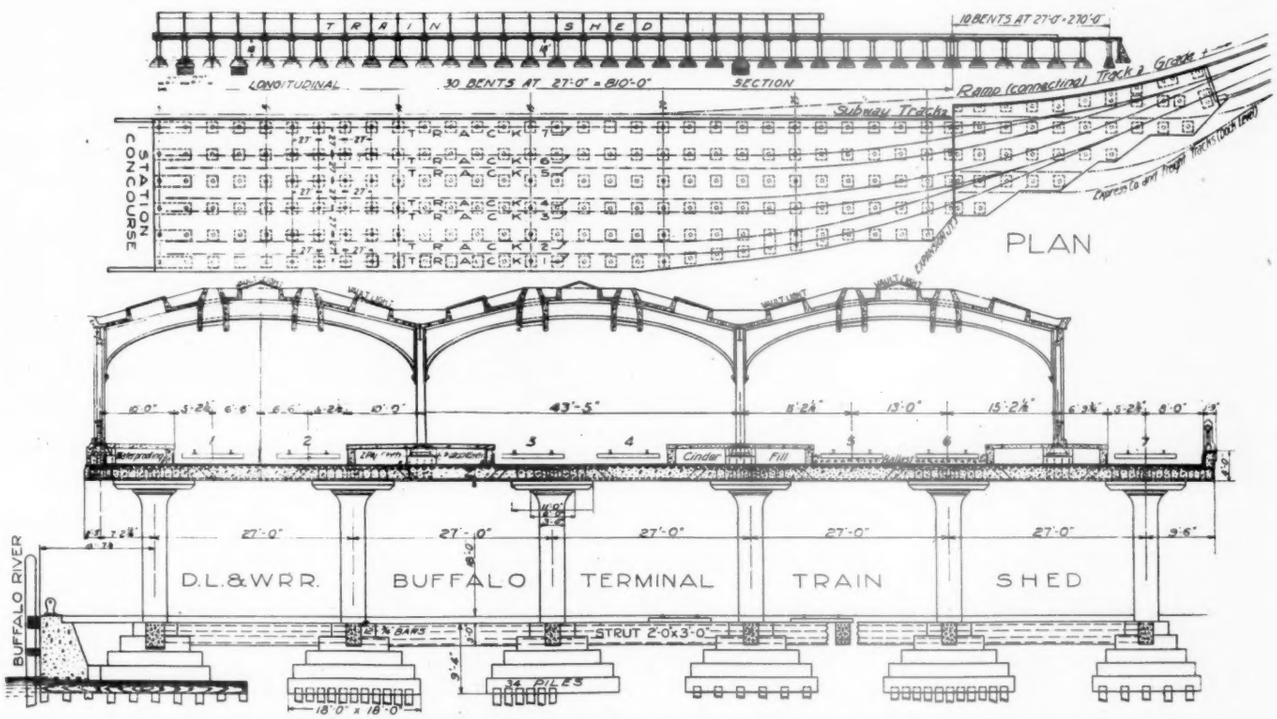
Assistant Engineer in Charge of Concrete Design, the Delaware, Lackawanna & Western, Hoboken, N. J.

The principal advantages of the flat slab compared with all other forms of reinforced concrete and other fireproof construction are embodied in the simplicity of both the formwork and the arrangement of the reinforcing steel. The first cost of construction has been so reduced thereby as to put structural steel, in competition with the flat slab within its limitations, substantially out of consideration; furthermore with concrete construction lower maintenance charges prevail and greater permanency is obtained. The simple arrangement of the reinforcing steel, laid over a practically unbroken flat surface, insures a more positive placement of the reinforcing bars than the general beam and slab design in concrete.

In addition to these general advantages of the flat slab construction there is one outstanding feature of the system which is of most vital importance in reinforced concrete construction. By reason of its uniform cross section and continuity of the reinforcement, there is no other type of reinforced concrete that is better proportioned to resist shrinkage and thermal changes. Structures of the flat slab type have been built in surprisingly great lengths without the incorporation of a single expansion joint and have successfully resisted the very severe strains of these stresses. By the insertion of an additional amount of reinforcing steel across construction joints, a constant tensile resistance can be maintained which has the effect of preventing cumulative action of the stresses at any particular section; the strain is distributed uniformly throughout, resulting in an infinite number of minute cracks that do not impair the strength of the structure.

Our experience does not extend over a sufficient length of time to ascertain definitely what effect the repeated action due to temperature changes will have eventually on the strength of the structures. However, very close observation of existing flat slab structures, in service from three to six years, have disclosed no deleterious effect due to these causes. The minute cracks found were of no greater concern than those developing on the tension side of a beam long before the steel has reached full working stress.

By way of comparison in this regard, to show the difficulties encountered in other types of concrete construction, consider the special arrangements in the manner of expansion and sliding joints that are necessary and not always efficacious in large concrete arch viaducts or in viaducts of the column, beam and slab design. In the viaducts consisting



Details of the Reinforced Concrete Flat Slab Train Shed, Lackawanna Terminal, Buffalo, N. Y.

of a series of large main arches surmounted by transverse spandrel walls supporting a floor system, the vertical movement of the heavy arch ring, for a rise and fall of temperature, is transferred to the floor system. This very appreciable vertical movement must be resisted by the comparatively light floor in addition to its own changes in a horizontal plane. In the case of the beam and slab design the constituent members have different sections and therefore offer varying degrees of tensile resistance. There arises the difficulty of transferring the movement from the larger through the smaller members, as from the deep beams through the thin slab, which is not always satisfactorily controlled.

Some Examples

The first and most extensive application of the flat slab system for carrying railway loadings was made in Chicago with the erection of the Soo Line freight terminal. The yard area required for this improvement amounted to 18.5 acres, comprising eleven city blocks located near the business and manufacturing centers. This entire layout for handling freight is carried on an elevated structure to meet the municipal requirements that no grade crossings should exist. Deck construction gave the greatest possibilities of storage development, making available 520,000 sq. ft. on the ground surface underneath the deck. The flat slab showed advantages of lower cost, lower maintenance and greater permanence as compared with structural steel. From a railroad point of view the outstanding feature is the possible flexibility in the track layout since the structure is designed to carry any arrangement of tracks on 12-ft. centers. This was obtained with very little additional cost over a fixed position of tracks and driveways. It was in this structure that those responsible for the design decided that no expansion joints were necessary and their judgment seems to have been justified.

The satisfactory results obtained with the flat slab system at the Soo Line terminal prompted its consideration and adoption by the Delaware, Lackawanna and Western Railroad in the recent construction of a viaduct approach to the station of the new terminal improvement at Buffalo, N. Y. The viaduct, 154 ft. in width and 1,070 ft. in length, supports a structural steel trainshed, platforms, and seven tracks on ballasted floor. Deck construction was admirably adapted to the maximum development of full terminal facilities in a very limited area. This new layout is located alongside the Buffalo river. The docking facilities are for Great Lakes steamers which can be unloaded directly under cover of the slab where storage and other shipping facilities, including express, are available. Two tracks are located on the dock level which connect by means of the subway and ramp tracks, with the main line tracks on the upper level. Passenger traffic is discharged on the upper level, precluding interference with other station appurtenances located on the ground level.

The perfectly flat unobstructed floor simplified the waterproofing treatment which consists of a membrane composed of two layers of cotton cloth saturated and applied with hot asphalt and protected by a cover of asbestos paper and two ¾-in. layers of asphalt mastic. Only one expansion joint was provided and this placed at bent 31 where the slab begins to narrow down from the seven-track to the two-track width at the easterly end. The joint was deemed necessary here for the reason that the narrow section would not offer the same tensile resistance to temperature changes as would the wider section. An accumulation of stress might reasonably be expected somewhere in the narrow section if no expansion joint were provided which might result in cracks of sufficient magnitude to impair the strength of the viaduct.

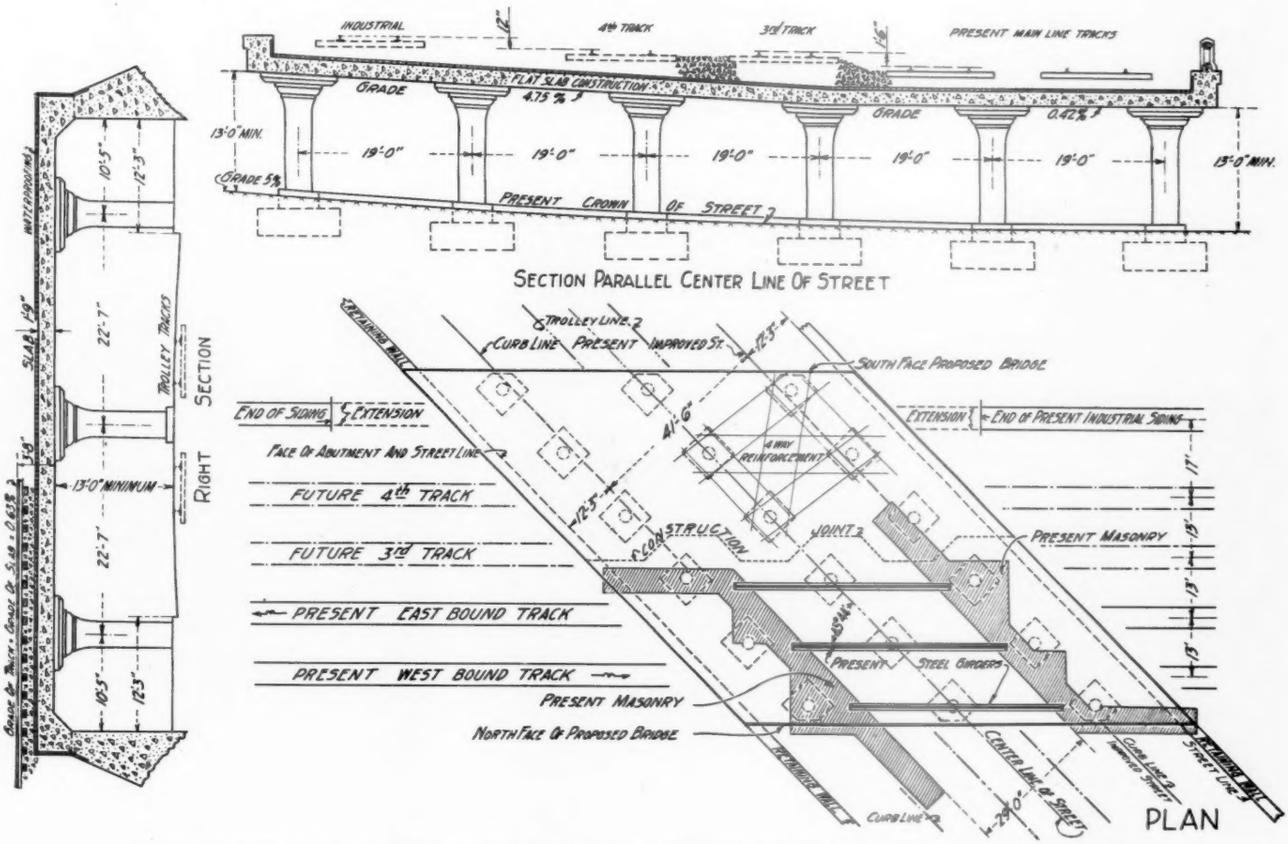
The only cracks so far developed have occurred in the end panel under tracks 1 and 2 between bents 24 and 25. These cracks developed before any live-load was applied in a section poured July 14, 1916. The waterproofing was laid during the following winter and it was on this panel that the kettles for melting the asphalts were placed, resulting in high temperatures in the slab. There is the possibility that the subsequent sudden cooling of the slab in zero weather caused the cracking. This hypothesis is not advanced so much in an endeavor to substantiate the writer's previous remarks—that the constant tensile resistance of the slab under ordinary conditions has the effect of preventing cumulative action of the stresses at any particular section—but is given rather for its value as a warning in anticipation of what may occur to any concrete bridge slab if too much heat is applied locally in extreme cold weather to a comparatively thin slab for any purpose.

The second application of the flat slab construction made by the Lackawanna solved in a very acceptable manner one of the perplexing problems encountered in grade crossing elimination through populous sections. The difficulty develops when it becomes necessary to acquire abutting property for the expansion of tracks and station facilities, in which case the property is usually rated at an exorbitant value.

Underside of the Slab in the Warehouse, Lackawanna Terminal at Buffalo, N. Y.

This condition prevailed in connection with track elevation work through South Orange, N. J., where the acquisition of more right of way would have been necessary for an additional third track and island platform together with a new station if the latter were to be built in the usual manner alongside. The necessity of purchase was obviated by the adoption of a flat slab viaduct, 79 ft. in width and 426 ft. in length, under which the station and all its appurtenances were built within the confines of the original right of way.

The proximity of South Orange avenue, a county highway, was an important consideration in favor of the slab construction since the easterly end of the viaduct is carried over this main thoroughfare. Included in the facilities provided under cover of the slab are a concourse connecting the station with the avenue and its trolley line, parking space for vehicles, a baggage platform and a heating plant apart from the station.



Proposed Application of the Flat Slab Design to a Difficult Bridge Problem, Lackawanna R. R.

There are many advantages in addition to that of economy to be gained by this type of construction. It permits of more effective architectural treatment; because of its shallow floor depth the track can be laid in ballast, which is a very important consideration in track construction; there are no girders projecting above the deck to encroach upon the lateral clearance of the motive power or to interfere, as in this case, with the construction of the platforms; the rigidity of the structure is noteworthy since no noticeable vibration is developed with the simultaneous passing of heavy locomotives at high speeds on all three tracks; by reason of this rigidity and of the ballasted floor, the rumbling noises common to structural steel bridges are very much subdued.

The same advantages that accrue from the use of flat slab construction covering large areas prevail for smaller structures and comparing the cost of structural steel with the flat slab for the small type railway bridge, it has been found in a number of estimates that a very appreciable difference existed in favor of the flat slab. In one case the cost of structural steel exceeded that of the flat slab by 200 per cent. This result was obtained where deck construction would have been required on account of a yard layout involving crossovers on the bridge, and a shallow floor depth was necessary because of close vertical clearances. The estimate included the price of structural steel at its high water mark.

The flat slab system has flexible possibilities not obtainable by established bridge construction at Lackawanna bridge No. 9.99. It is proposed to remove the present two track steel bridge for the reason that the abutments, 29 ft. apart, encroach upon the new 41-ft. 6-in. driveway, which has been substantially paved with granite block on a concrete base. The bridge is to be extended for future track development on the southerly end, including the installation of an industrial track by extension of the present separate sidings which terminate close to the proposed bridge on either side.

Lateral street intersections fixed the five per cent grade of the street on the southerly side to begin at the face of the present steel bridge, thereby materially encroaching upon the vertical clearance for future expansion of tracks at their present elevation. To overcome this difficulty the flat slab is here tilted in the transverse direction to be approximately parallel with the grade of the present crown of street, and in the longitudinal direction parallel with the grade of the tracks. This flexibility and relative shallowness of the slab have resulted in a very shallow floor depth, preserving the continuity of the ballasted main line track construction, and the extension across the bridge of the industrial siding to the right at its present elevation without resorting to the usual alternative of lowering the street which in this case

would be a very expensive operation. When the future third and fourth tracks are laid, they can easily be established at the elevation 1 ft. 6 in. above the present tracks necessary to provide the proper amount of ballast.

The most important consideration in the construction of the small type railway bridge on an established alinement is to maintain traffic without interruption during the operation. This is handled in a number of ways. Where the topography will permit, the alinement is shifted temporarily in order that the bridge might be built clear of traffic, in part or in its entirety. Where the right of way is of limited width and the tracks cannot be shifted, a timber pile bent trestle of 12-ft. spans is driven under traffic and between these bents, after the excavation has been made the abutment and piers only of the new bridge can be built. Long temporary through girders are often used to span out to out of the new abutment lines in order that the entire bridge may be built underneath. If no old girders are available and the only solution is the timber trestle there arises the exclusion of the flat slab construction, for the reason that the floor system of the new bridge must be erected beyond the bridge site, either in units or in the whole, followed by a quick removal of the trestle stringers and the installation of the completed floor system on the new masonry during hours of least traffic.

This very important consideration of construction is satisfied in the last example by dividing the work into two parts along the construction joint as indicated. This joint is placed without weakening the strength of the slab and so that the southerly half can be built first without interference with traffic and alongside of present structure by removing only a small portion of the old masonry. The main line tracks will be shifted temporarily to the completed half, which gives clear field for the removal of the old bridge and completion of the new structure. The bulkheads of the construction joint are arranged to be practically normal to the bands of reinforcement.

The measure of the advantage in cost of the flat slab railway bridge, compared with other types, varies considerably and is dependent upon the conditions at hand. There seems to be no question concerning the architectural and structural advantages, the latter results in less maintenance and greater permanence. Of immeasurable value is the simplicity of design and the expediency with which the construction can be carried on. These features are emphasized in the last example which, with its 45° 44′ angle of crossing coupled with the grades of the street and tracks, would considerably complicate the details of design and construction of established bridge practice. The flat slab design will not require any special consideration on account of these complications. Its flexibility offers much opportunity in overcoming and simplifying other inherent complications of the small railway bridge.

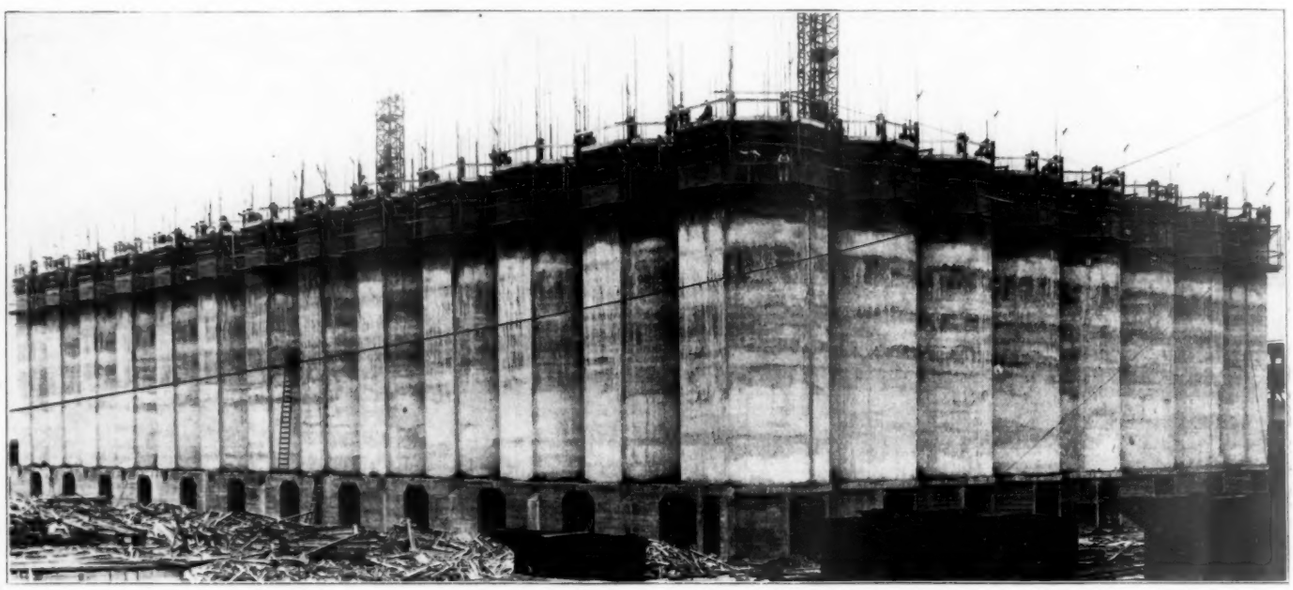
The Chicago & North Western Elevator

By F. C. Huffman

Assistant Chief Engineer, Chicago & North Western, Chicago

The Chicago & North Western's 10,000,000 bu. terminal elevator, completed at the close of 1917 and leased to the Armour Grain Company for operation, is the largest and most completely equipped grain elevator in the world. It is located on the west bank of the Calumet river, near One Hundred and Twenty-second street, Chicago.

The plant is so situated that grain is received and shipped both by rail and water. By rail the daily receiving capacity is 1,296,000 bu., and the daily shipping capacity 1,296,000 bu. By boat the daily receiving capacity is 480,000 bu. and the shipping capacity 1,440,000 bu. All of the above operations may be carried on simultaneously. The handling capacity of the elevator depends on the receiving capacity, which is 1,776,000 bu. per day, or, as expressed in car units, over 1,000 cars per day.



Partly Completed Bins Showing the Forms in Position

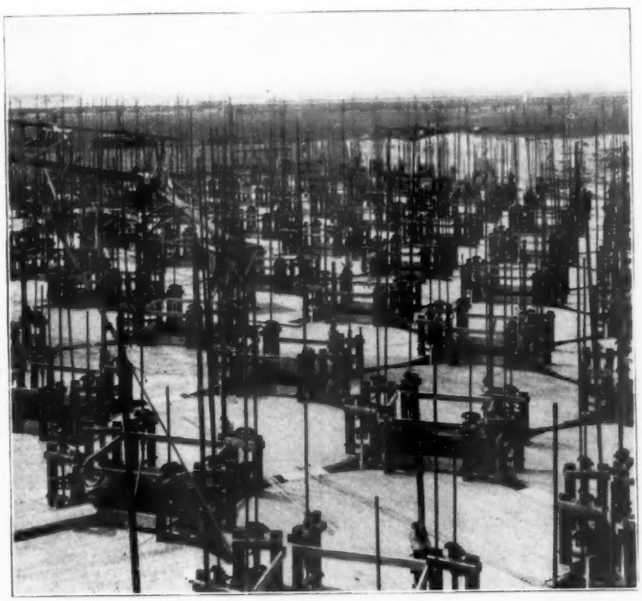
The main structure consists of track shed, work house, storage house and river house, all of which are combined in one unit and built of reinforced concrete, with the exception of the cupola, which is built of structural steel and supports curtain walls of concrete two inches thick reinforced with No. 9 wire mesh. These curtain walls are built of "gunite" placed by the cement gun.

It is necessary when undertaking the construction of such a great structure to have a large and well designed concrete plant which will carry out the work economically. This consisted in part of an elevated railroad track for receiving sand and gravel in hopper bottom cars which were dumped from a trestle into a hopper from which a belt conveyor

carried the material up an incline of 20 deg. to a height of 40 ft. Here it was dumped and distributed uniformly by a traveling tripper into a large storage bin 200 ft. long. This bin had a sloping bottom and was divided into two compartments, one for sand holding 1,000 cu. yds., and one for gravel holding 2,000 cu. yds. A belt conveyor running underneath for the entire length received the material from the bin and carried it to a cross belt which again elevated the material to a height of 40 ft. Here it delivered it to a long belt running parallel to the building.

This belt delivered to three separate mixing plants equally spaced near the side of the structure. Each mixing plant has a sand hopper of 40 cu. yds. capacity and a gravel hopper of 80 cu. yds. capacity located directly over the mixer. The material is delivered to the mixer through measuring chutes.

The cement in most cases was taken directly from cars which were brought opposite each mixer on a material track. A 600-bbl. cement shed was built at each mixer plant to store the cement in case cars were not delivered regularly.



A Top View of the Bin Forms During Construction

Water was supplied from the river by the use of a motor-driven triplex pump automatically controlled by a cut-off switch, at a maximum pressure of 80 lb. A one-yard electrically driven mixer was installed at each plant. After the concrete was mixed it was dumped into hoisting buckets at each of the three plants and hoisted to the proper height, where it was delivered to distributing chutes. The distributing chutes had swivel legs and balanced cantilever discharge spouts operating in a radius of 100 ft. This method of handling the concrete was used for all the foundation slabs, basement walls and bin floor slabs. Above these sliding form work was used and the "buggying" method was followed. Each of the concrete plants was able to deliver 1,200 cu. yds. during a period of two 10-hr. shifts. When operating at capacity a batch of concrete was turned out every 47 sec. All conveyors, hoists, mixers and machinery were electrically driven by current brought in at 12,000 volts and stepped down to 220 volts at a temporary transformer building on the site.

The foundation for the structure consists of 18,200 timber piling of an average length of 36 ft. below cut-off, spaced 2½ ft. center to center. After the piling was cut off the concrete mattress was poured over the entire area. This mattress consisted of gravel concrete, heavily reinforced with steel bars and varying in thickness from 1 ft. 6 in. to 2 ft. 4 in., as requirements demanded. As soon as a section of the mattress was completed, workmen began placing the stationary forms for the basement story. This story is used for the machinery and belt conveyors employed in conveying the grain from the track shed to the work house or river house and for receiving the grain from the river house, and storage bins, and delivering it to the work house. The walls and piers in this story are of massive design owing to the enormous load they must support. In the storage house and the river house the forming was so arranged that the bin bottom slab and walls were poured together, making a monolithic structure.

The concreting of the circular bins was next in order of procedure. The bins of the storage house, 104 in number, are 105 ft. high and 22½ ft. in diameter, on the center lines of the walls which are 7 in. thick, reinforced horizontally with flat bars. The forms consisted of an outer and inner wall section built of 4-in. beveled vertical staves, 4 ft. high, and held together by yokes. There were eight yokes to a bin, each yoke having a lifting jack of the "monkey motion" type attached to it. This type of jack was especially designed for this job, and operated upon a one-inch pipe which served as the vertical reinforcing for the walls. This jack operates with a lever working through a vertical arc and eight were used on each bin form. The vertical pipes were spliced with a butt joint and a filler which permitted the jacks to operate without any interference with the joints or the placing of additional lengths of pipe. The pipes were marked at six-inch intervals, to assist the workmen on the jacks in carrying the forms up in a level position and also inform them the amount they were required to raise at any one time. These forms were so connected by vertical rods and cast slides that the raising of one form did not disturb the adjoining forms. Each bin form was lifted six inches in turn, the workmen making the round in regular order, and the steel placers following closely behind, after which the concrete was poured, making the work a continuous performance. These 104 bins were run up 105 ft. in 17 days, working two 10-hr. shifts per day. The 24 bins of the river house were run up a distance of 95 ft. in 11 days' time, working two 10-hr. shifts per day.

All roofs and floors were constructed of reinforced concrete. There were 62,000 cu. yds. of concrete, 1,750 tons of reinforcing steel, 2,000,000 ft. b.m. of form lumber, 94,000 bbl. of cement consumed in this structure.

THE DRIVE IS ON for War Savings Stamps! Remember that the soldier's chance of life depends upon the support given him by the folks back home. Help! Save and buy War Savings Stamps.

TRAINS BY WATERPOWER IN SPAIN.—Telegraphing recently from Madrid, the special correspondent of the London Daily Mail said that in a debate on railways in the Spanish Senate, Senor Cambo said the government was occupied with a large scheme for the development of hydro-electrical energy, and more than hinted at the existence of a plan for operating thus the main railways of the country. The correspondent added: "As the industrial development of Spain is hung up for lack of communications and transport, and as transport at present depends on coal, the importance of this project can hardly be exaggerated. It is interesting to note also that practically all hydro-electrical plants in the country are run with German machinery, and that their usual commercial forethought has been displayed in a systematic cultivation of the subject, as well as in a good deal of surveying and buying of properties where this power could be developed on a large scale. There is enough waterpower in Spain to do the whole work of the country."

Directors' Orders Governing the Western Regions

DURING THE PAST WEEK the regional directors of the western regions issued a number of orders, among which the following are noted: Supplement No. 3 to Circular 126, directed to southwestern and northwestern railroads, and Circular No. 7 sent to central western railroads, all under date of June 26, interpret Circular No. 126 on advertising regulations as not prohibiting the distribution of stocks of maps on hand as long as the supply lasts.

Circular No. 135 directed to northwestern railroads and Circular No. 13 directed to central western railroads, as well as an unnumbered circular directed to the southwestern lines—all three dated June 26—ask for an expression of opinion on the advisability of appointing one watch inspector for all roads at watch inspection points, whose sole duty would be inspection of time pieces and who would receive compensation therefor from the carriers. The circular asks whether the present system under which watch inspectors receive no compensation except the profit on watches which they sell, does not in some cases result in the practical compulsion of the employees to buy new watches from the men who pass upon their time pieces.

Supplement No. 3 to Circular No. 32 to northwestern and southwestern roads and Circular No. 9 to central western roads, dated June 26, outline a new procedure which will be followed in making applications for the opening up of new coal mines. Applications hereafter will be made by the coal mining company, in the first instance, to the Fuel Administration which, if it considers them worthy of attention, will pass them on to the Railroad Administration for more detailed consideration. At the conclusion of an investigation by the latter organization, a joint decision will be made by both administrations.

Circular No. 11, dated June 26, addressed to central western railroads quotes a letter addressed to the director general by the manager of the troop movement section which suggests that obsolete and weak passenger cars now put into bunk car service, might be used for the transportation of working men to and from the large ship-building and explosive plants now engaged in war work. The circular asks central western roads to prepare statistics on the amount and present distribution of this class of equipment.

Circular No. 22, dated June 27, and addressed to central western railroads quotes a letter from W. S. Carter, director of the division of labor of the Railroad Administration, which suggests that in view of the scarcity of train service employees the possibilities of employing firemen, brakemen and men in other similar service below the age of 21 might well be studied. Central western lines are requested to express their opinions on this matter and to advise if the state laws in their territories would interfere with the course suggested.

Supplement No. 1 to Circular No. 122 to southwestern and northwestern railroads and Circular No. 19 to central western railroads, all dated June 27, ask carriers to encourage full box car loading. While there is at present a surplus of this class of equipment throughout western territory, this should not be permitted to serve as an excuse for light loading as an usually heavy crop movement is in prospect.

Supplement No. 1 to Circular No. 96 sent to northwestern and southwestern railroads and dated June 27, states that employees' magazines now published by the various railroads and circulated free among their employees may be continued but that new ones should not be started.

Supplement No. 2 to Circular R. P. C. 13, dated June 26, and sent to all western railroads, asks them to confine the sale of scrap wheels to companies manufacturing cast iron car wheels for railroads.

Circular No. R. P. C. 16, dated June 28 and directed to all western railroads, asks that every effort be made to reduce the size, quantity and weight of table clothes, napkins, towels, etc., purchased for use in dining cars, lunch rooms and other places where furnished by railroads. This request is made because of the scarcity of linen and cotton fabrics for table ware and their present high prices.

Supplement No. 3 to R. P. C. Circular No. 3, dated June 18 and sent to all western railroads, asks for certain detailed information concerning all fuel coal contracts, heretofore or subsequently made including the names of the vending company, the producing company and the mine, its location, the date of contract, the date of expiration, the net tons ordered, the approximate weekly shipment required, the grade of coal, the routing, the price, etc.

Circular No. R. P. C. 15, dated June 28, and sent to all western railroads states that during the next few months carriers will find it necessary to order smooth forged axles for their own use and to turn them down in their shops, where facilities for doing so are available. This will enable the axle manufacturers to utilize their maximum capacity for rough-turning axles for the United States standard cars now under construction.

Disposing of Old Ties

Circular No. 138 to northwestern railroads, Circular No. 23 to central western railroads and an unnumbered circular directed to southwestern railroads, all dated June 28, suggest certain rules to govern the disposition of old ties. Old ties will be used for lighting fires in engines to such an extent as may be advantageous and economical. Section employees will be allowed such old ties as the roadmaster may allot them for their personal use only. Ties may be given to farmers in exchange for plowing fire guards, mowing the right-of-way or for the privilege of erecting snow fences on adjoining land, under the direction of the roadmaster and division superintendent. Old ties may be disposed of to the public at such places as there may be a demand for them and at reasonable prices, provided they can be picked up by the purchaser without expense to the railway. In wooded localities where there is no demand for old ties and in other places where ties cannot be disposed of in accordance with the previous instructions they will be burned, under favorable weather conditions, so that the right-of-way may be kept cleaned up.

Maintenance of Way Labor

Circular No. 16 sent to central western railroads and unnumbered circulars directed to northwestern and southwestern lines, all under date of June 26, include questionnaires on maintenance of way labor conditions which are to be filled out for the information of the Board of Railway Wages and Conditions. The questionnaire asks for the previous rates of pay, hours of labor, manner of paying,—whether by day or by hour—the rate of overtime paid, recommended changes in wages and working conditions, etc.

Application of Superheaters

Circular No. 132 to northwestern railroads and Circular No. 10 to central western railroads and an unnumbered circular directed to southwestern railroads, all dated June 26, contain the following instructions:

1. Locomotives in shop receiving Class 1, 2 or 3 repairs will be superheated as material is available and labor conditions will permit.
2. Locomotives in freight or transfer service, having 30,000 lb. or more tractive power, and in passenger service having 25,000 lb. or more tractive power, will have preference, and locomotives with the longest prospective life will be first equipped.
3. If superheater material is on hand for locomotives not covered by the above ruling, it should be used on smaller engines if not interchangeable with larger ones, the idea being to obtain the benefit of its use rather than to have it remain in stock because of not conforming to the above requirements.

The Bearing of Malaria on Railroad Operation*

Description of Benefits Which Accrued to a Road from a Campaign to Eliminate This Sickness

By H. W. Van Hovenberg

Sanitary Engineer, U. S. Public Health Service, and Formerly Sanitary Engineer, St. Louis Southwestern
Texarkana, Ark.

THE MATTER OF HEALTH PROTECTION for employees of large business enterprises has long since passed the experimental stage. Protection of health leading to increased efficiency, better social conditions, and greater contentment among laborers is now accepted as a paying investment of the highest order. Some health protective agencies have been thrust upon the railroads for the protection of employees and the public, such as safe drinking water, drinking

Spraying Oil on Stagnant Pools Prevents Mosquito Wiggletail from Getting Air and Kills It By Suffocation

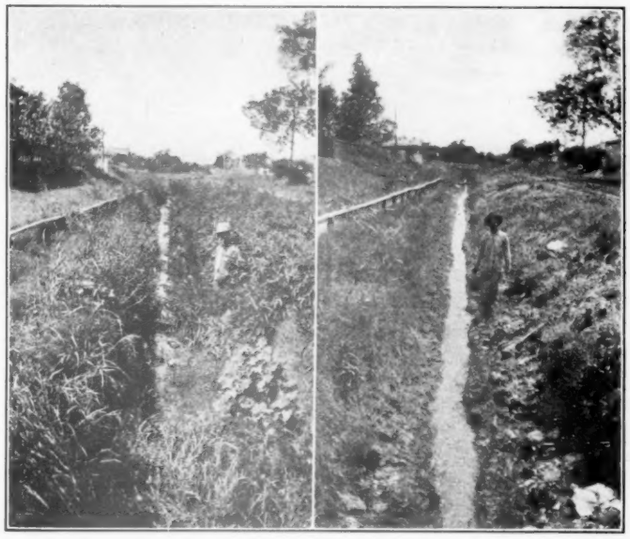
cups, and pure ice supply. Other protective activities have been inaugurated by the railroads; such as the "Safety First" movement, the teaching of first aid among employees, and the employment of sanitarians to look after the proper construction of toilets, ventilation of offices, proper feeding of work crews, etc. Within the past few months the St. Louis Southwestern has created a new department devoting its entire time to the elimination of malaria from among some 15,000 employees working over approximately 2,000 miles of trackage in five states.

Anti-malaria work, as undertaken by this road, was inaugurated through a study of the records of the employees' hospital by Edwin Gould, chairman of the board of directors. Mr. Gould found that over a period of four years 25 per cent of all patients entering the hospital were being treated for malaria and that approximately one-fourth of all the medical and surgical relief furnished at this institution was devoted to the treatment of malaria patients. He found that there had been an annual average of 640 cases of malaria treated at the hospital during the past four years and that each patient received treatment over an average period of five days. These startling figures do not include the hundreds, and more likely thousands of men treated for malaria by local surgeons. Here was a problem. It was obvious that a point of high efficiency among the thousands of employees could not be reached while malaria had such a grip on their energy and vitality. The relation of malaria to the management of labor on the railroad becomes obvious when we consider some of the ways in which it increases tremendously the burden of both employer and employee.

(1) There is a turnover of labor many times during the season caused by malaria infected men joining the gangs only to leave at the end of one or two days' work. A foreman never knows how many laborers he will have ready for work, and a superintendent is never certain that a foreman can complete his work on time due to this uncertainty.

(2) There is a large class of railway employees, including ticket agents, clerks, telegraph operators, and others more or less skilled who have necessarily spent many years in mastering their line of work. Many of these employees are exposed to malaria infections, and the railway often pays for time lost and supplies less skilled labor in their absence. It is obvious that the positions of employees who have passed through years of training cannot be filled temporarily, without the possibility of error, without chance of accident, and without certain delays that may be of serious import.

(3) We have a large number of skilled employees working about machinery. Sickness from malaria among such men, who are trying to work while infected, means the



A Mosquito Breeding Ditch and Its Appearance After Cleaning—A Step in the Anti-Malaria Campaign

likelihood of accident for which the company will pay in full measure, means the mistreating of tools and machinery, and of far greater importance, a certain decrease in output. Perhaps the greatest financial loss to the railway is due to the very large number of light cases of malaria which do not even receive the attention of the local physician, or of any physician for that matter. I mean such a case as a man trying to work and give full value in return for his wages, but who cannot do so, because of the fever. Such cases are

*Abstract of a paper read at the National Malaria Committee Conference on Malaria, held at the Hotel Chisca, Memphis, Tenn., on November 12, 1917, in which additional information has been incorporated.

numerous in communities where high malaria rates prevail.

(5) The contentment of a laborer has much to do with his efficiency. Naturally a man working in a malarial locality with his wife and children sick with fever, with his savings going to pay the doctor and the undertaker, cannot be a happy and contented employee. Again an efficient and conscientious employee looks forward to advancement. His general efficiency, and record for always being on duty is much in his favor. The man who is suffering from malaria and who is off duty from time to time is not favored when the opportunity comes for advancement.

Early in the spring of 1917 the income from a trust fund created by Mr. Gould was made available for anti-malaria work. The fund is being expended with two distinct purposes in mind; (1) to increase the efficiency of the railway labor and to decrease the number of hospital cases resulting from malaria infection, and (2) to serve the public by co-operation with cities and towns and business enterprises in ridding their respective communities of malaria, and thus doing health protective work of the highest order.

Anti-malaria demonstration work of the St. Louis Southwestern was organized by officers of the United States Public Health Service, including J. A. LePrince, well known for his work in Panama, and Drs. H. C. Derivaux, T. H. D. Griffitts, and L. L. Williams, Jr., of the Malaria Investigation Branch of the Service. The demonstration work in Lufkin, Tyler and Keltys was well started when these gentlemen were recalled about July 1, to control the malaria problems about the army cantonments and aviation fields, and at which time a sanitary engineer was employed by the railway to continue their work.

The seasons' work embraced demonstrations of malaria control in the cities of Tyler, Texas and Texarkana, Ark., each with a population of approximately 17,000, in the city of Lufkin, Texas, with a population of about 3,000, and adjoining which city the large lumber mill of the Lufkin Land and Lumber Co. is located, and in the two typical lumber mill towns of Keltys and Wildhurst, Texas.

The work in the cities and towns before mentioned consisted in the destruction of all possible breeding areas of the Anopheles or malaria bearing mosquito, and in the removal of as many as possible of the breeding areas and containers of the common house mosquito, which, however, does not carry malaria. A demonstration of the value of screening the living quarters of extra gangs and bridge and building outfits was also carried on. Early in the spring, most of the outfit cars and bridge and building department cars were screened, but no serious attempt was made to instruct the men living in these cars in the purpose of the screening, which would undoubtedly have been of great value.

Analysis of Work in the Cities

Early in May work was started in Tyler, a city in which there are approximately 700 St. Louis Southwestern employees. For this work the city appropriated not to exceed the amount of $1,000, in labor and team hire, while the railway on its part agreed to furnish all other labor and expense for the seasons' work. Briefly the results have been a decrease of 45 per cent in the number of employees admitted for malarial treatment at the Texarkana hospital, as shown by the comparison of the hospital records for the months of June and September, inclusive, of this and last year. A study of the prescription records of a Tyler drug store chosen at random, shows a decrease in the actual "quinine subscriptions" written for patients suffering with malaria of 49 per cent for the months of May to October, inclusive of 1916 and 1917. From several reliable sources I am told that the malaria sickness rate in Tyler was almost negligible this year. The Anopheles breeding areas in Tyler were kept under control throughout the summer with comparative ease. On the other hand the propagation of Culex, or the ordinary house mosquito, gave us much concern. The complete elimination of this mosquito from Tyler must await education of the public and a livelier interest on its part in removing the breeding places from about private homes.

The work in Texarkana was started on August 1, and Anopheles breeding was under control within a few days. In this instance, the cities of Texarkana, Ark., and Tex., shared alike in the expense of the demonstration work up to $600 for each city. Neither city had available cash for this work, but readily accepted an offer of the St. Louis Southwestern to accept script in payment of labor furnished by the railway, said script to be applied in the payment of taxes.

The city of Lufkin was chosen for demonstration work by officers of the United States Public Health Service because of its reputation for malaria sickness, and because of the occasional cases of malaria of the pernicious type reported in that vicinity. The St. Louis Southwestern supplied five-ninths of the cost for the Lufkin demonstration, the other four-ninths being supplied by the Lufkin Land and Lumber Company, Mrs. G. A. Kelly, a club woman of Lufkin, who is deeply interested in civic and public health matters, and the Women's Civic League. There are no public health records with which to interpret the result of the demonstration work in Lufkin. What was accomplished may possibly be shown through an analysis of the prescription records of the four drug stores. During the months of June, July, August, September and October, the relative number of quinine prescriptions to the total prescriptions filled by these stores decreased from approximately 17 per cent in 1916 to about 7 per cent in 1917. The prescription records of the third largest drug store, but one, in which records are well kept, show that there was an actual decrease of 310 in the number of quinine prescriptions filled this year from July 1 to November 1, compared with corresponding months of last year, amounting to a relative decrease of 82 per cent. The decrease in prescriptions at this one store alone, if counted in dollars, amounts to as much as the entire cost to the people of Lufkin for the anti-malaria work during the entire season. This does not take into account the savings to the people through not having to pay doctors' bills, and not having to lose their wages. During the month of August, 1916, the four drug stores in Lufkin filled 447 prescriptions. This number decreased to 141 in August, 1917, or a reduction of 69.5 per cent.

I am informed by Dr. O. M. Dillen, company physician for the Lufkin Land and Lumber Company, that he has observed a decrease from 85 to 90 per cent in the number of cases of malaria treated by him this year as compared to last. As in Tyler, the control of Anopheles breeding was a simple problem compared with the elimination of the common house mosquito, and here again the final elimination of the mosquitoes rests on the degree of co-operation received from the public of Lufkin.

The San Augustine County Lumber Company at Keltys, a typical mill town, paid the entire cost of its anti-malaria work, while the railway on its part furnished the services of its sanitary engineer in the direction of the work. This company produces from two to three million feet of lumber per month and, like most other lumber mills, has been working day and night to keep up with the demand for its product. Every request made on the mill in the way of furthering the malaria control work was granted immediately, for the management realized the importance of keeping its employees well. The labor situation was very acute. Wages were raised and every means taken to secure and to keep a full quota of men. The army draft, volunteers, and the demand for labor in the picking of cotton and for work at cantonments, produced a labor shortage never known before in East Texas. E. L. Kurth, secretary and treasurer, told

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raffic assistant.

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All railroads north of the Ohio and Potom rivers and east of Lake Michigan and the Indian Illinois state line; also those railroads in Illino extending into that state from points east of t Indiana-Illinois line, but excluding those roads i cluded in the Allegheny and Central Weste Regional Districts.

Allegheny Region

Pennsylvania Railroad (east of Pittsburgh a Erie).
Baltimore & Ohio (east of Pittsburgh and t Ohio river).
Bessemer & Lake Erie.
Cumberland Valley.
Central Railroad of New Jersey.
Coal & Coke.
Philadelphia & Reading.
Western Maryland.
Cumberland & Pennsylvania.
Pittsburgh & Lake Erie.

Pocahontas Region

Chesapeake & Ohio (east of Louisville, K Columbus and Cincinnati, O., including the Che peake & Ohio Northern).
Norfolk & Western.
Virginian.

Southern Region

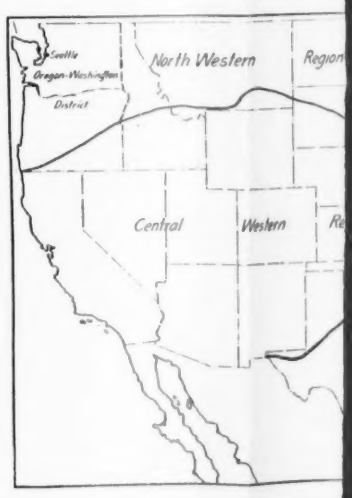
All railroads south of the Ohio and Poto rivers and east of the Mississippi river, also th railroads in Illinois and Indiana, extending i those states from points south of the Ohio ri and not included in the Pocahontas and Cent Western regional districts.

Northwestern Region

Chicago & Northwestern.
Chicago, St. Paul, Minneapolis & Omaha.
Chicago Great Western.
Chicago, Milwaukee & St. Paul.
Great Northern.
Minneapolis & St. Louis.
Minneapolis, St. Paul & Sault Ste. Marie.
Northern Pacific.
Oregon-Washington Railroad & Navigation.
Southern Pacific Lines (north of Ashland, Or
Spokane, Portland & Seattle.
Spokane International.

Central Western Region

Atchison, Topeka & Santa Fe.
Chicago, Rock Island & Pacific (except from



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Supervisor of Coal Traffic, Kansas City, Mo.
pervisor of Coal Traffic, Chicago.

James H. Cherry,
egional Traffic Representative
U. S. Food Administration.

Regional Limits

Eastern Region

All railroads north of the Ohio and Potomac rivers and east of Lake Michigan and the Indiana-Illinois state line; also those railroads in Illinois extending into that state from points east of the Indiana-Illinois line, but excluding those roads included in the Allegheny and Central Western Regional Districts.

Allegheny Region

Pennsylvania Railroad (east of Pittsburgh and Erie).
Baltimore & Ohio (east of Pittsburgh and the Ohio river).
Bessemer & Lake Erie.
Cumberland Valley.
Central Railroad of New Jersey.
Coal & Coke.
Philadelphia & Reading.
Western Maryland.
Cumberland & Pennsylvania.
Pittsburgh & Lake Erie.

Pocahontas Region

Chesapeake & Ohio (east of Louisville, Ky., Columbus and Cincinnati, O., including the Chesapeake & Ohio Northern).
Norfolk & Western.
Virginian.

Southern Region

All railroads south of the Ohio and Potomac rivers and east of the Mississippi river, also those railroads in Illinois and Indiana, extending into those states from points south of the Ohio river and not included in the Pocahontas and Central Western regional districts.

Northwestern Region

Chicago & Northwestern.
Chicago, St. Paul, Minneapolis & Omaha.
Chicago Great Western.
Chicago, Milwaukee & St. Paul.
Great Northern.
Minneapolis & St. Louis.
Minneapolis, St. Paul & Sault Ste. Marie.
Northern Pacific.
Oregon-Washington Railroad & Navigation.
Southern Pacific Lines (north of Ashland, Ore.).
Spokane, Portland & Seattle.
Spokane International.

Central Western Region

Atchison, Topeka & Santa Fe.
Chicago, Rock Island & Pacific (except from St. Louis to Kansas City; lines east of El Reno; lines El Reno to Memphis and branches, and south of Chickasha).
Chicago, Peoria & St. Louis.
Chicago & Alton.
Chicago & Eastern Illinois.
Chicago, Terre Haute & Southeastern.
Chicago, Burlington & Quincy.
Colorado & Southern.
Denver & Rio Grande.
El Paso & Southwestern.
Illinois Central (north of Cairo and Paducah).
Los Angeles & Salt Lake.
Northwestern Pacific.
Oregon Short Line.
Quincy, Omaha & Kansas City.
Southern Pacific Lines (west of El Paso and Ogden, except north of Ashland, Ore.).
St. Joseph & Grand Island.
Union Pacific.
Western Pacific.

Southwestern Region

Fort Worth & Denver City.
Fort Worth & Rio Grande.
Gulf, Colorado & Santa Fe.
Gulf Coast Lines.
Galveston, Harrisburg & San Antonio.
Houston & Texas Central.
Houston, East & West Texas.
International & Great Northern.
Kansas City Southern.
Louisiana & Arkansas.
Louisiana Railway & Navigation.
Louisiana Western.
Midland Valley.
Missouri Pacific System.
Missouri, Kansas & Texas.
Morgan's Louisiana & Texas Railroad & Steamship.
Rock Island Lines (south of Chickasha; El Reno to Memphis and branches; and St. Louis to Kansas City).
St. Louis-San Francisco.
St. Louis Southwestern.
San Antonio & Aransas Pass.
Texas & Pacific.
Texas & New Orleans.
Wabash Railroad (St. Louis to Kansas City and Omaha).
Wichita Falls & Northwestern.
Texas Midland.
Wichita Valley.

the writer of this paper, that if there had been the same amount of sickness this year in Keltys that obtained during 1916, the lumber mill would have been closed down probably one-half of the time.

Let us see what bearing malaria work in Keltys has to railway management. The San Augustine County Lumber Company pays approximately $25,000 per month to the Cotton Belt for the hauling of its freight, of which $15,000 is retained by the Cotton Belt, the balance of $10,000 going to connecting lines. On this basis during the months of greatest malaria infection, namely, July, August, September and October, the St. Louis Southwestern received this year approximately $60,000 for the hauling of freight. According to Mr. Kurth this would have been reduced to $30,000 had not excellent health conditions been maintained at Keltys. We can claim approximately $30,000 then in the railway company's receipts from handling of freight which represents very clearly the definite connection between anti-malaria work and railway operation. In dollars and cents the income of the Cotton Belt has been increased by the profit on handling $30,000 freight. This profit will pay many times over the cost of anti-malaria work at Keltys. This example is typical to some extent of what has prevailed at the lumber mills in Lufkin and in Wildhurst.

Work Among Employees

The St. Louis Southwestern anti-malaria demonstration work for 1917 included the protection of the employees themselves from mosquitoes through screening, and the eradication of malaria bearing mosquitoes from cities and towns by removing and destroying their breeding places.

A large number of employees live and sleep on cars fitted up for the purpose. These work trains of various kinds are often located in highly malarious districts. The men are thus exposed to infection. For the months of May to October, 1916, 13 per cent of all the malaria patients in the employees' hospital came from the bridge and building department, which department employed one per cent approximately of the total employees of the road.

J. M. Herbert, president of the St. Louis Southwestern System, ordered all cabooses, extra gang cars, work trains and bridge and building cars screened before the mosquito season of 1917. He gave his personal attention to this work to the extent of inspecting the screening of outfit cars while on tours of inspection along the line. As a result of these measures it was found that the relative number of hospital cases from the bridge and building department alone decreased nearly one-half in 1917. The records show that for the month of May to October inclusive in 1916, one employee from the bridge and building department went to the hospital for malarial treatment for every 3,960 man-hours of labor put in by the department, while for the same period of 1917, one man went to the hospital for every 7,580 man-hours, a relative decrease of 47.7 per cent. Screening the sleeping quarters of these employees was undoubtedly responsible in a large measure for this great reduction.

Orders are now out, directing that all screening be repaired and that new screening be done wherever needed, in preparation for the 1918 mosquito season.

Protection of the men living on work trains is secured easily and without undue expense. Screening of windows and doors must be well done, and only screen wire having 16 meshes or over to the inch should be used. Screen that will keep out flies will not be effective against mosquitoes. Defective screening will permit mosquitoes to enter the sleeping cars at night. At daybreak they try to get out, but in the short interval before full daylight they are unable to find the particular hole in the screen that they searched half the night for. Consequently the car becomes a mosquito trap and the infected mosquito must hide and await her time to bite another victim and thus spread malaria from one person to another in the same car.

Holes in the floors, walls and ceilings of the cars should be completely closed, and the screen door braced against sagging. Painting the ceilings of the cars white and puttying up all the cracks will permit swatting the mosquitoes each morning at daybreak. Any infected mosquito will be destroyed, even if the men in the cars were bitten and disturbed by the pests. This method of control was admirably demonstrated by Mr. Le Prince in Panama with construction gangs.

The fumes of certain chemicals when burned will destroy the adult mosquito. This should be done at night before retiring, since the malaria bearing mosquito does her biting as a rule only at night, and she may not give notice of her presence about the car to the sleepers because she does not make the loud humming sound usually associated with the more numerous and better known varieties of mosquitoes. In handling construction trains the officials in charge of work crews should choose points for the location of cars that are as far removed from mosquito breeding areas as possible. Perhaps a very little work with shovels will drain standing water near outfit cars or a few applications of oil will destroy the breeding areas of myriads of mosquitoes. Thus the foreman of the gang may be saved from issuing hospital slips to men down with chills and fever, and also saved from the criticism of his superiors who demand results.

Certain railway employees are not easily protected from malarial infection. For instance, conductors, engineers, firemen and brakemen may work several ways out of a division point. They may sleep in several different places during the week and they may be obliged to sleep without proper protection by screens. These men can protect themselves by use of mosquito bars carried with them for this purpose, or they may resort to the use of quinine. It is well known that quinine, when used in suitable amounts and at required times, will render most people immune from malarial infection. Such a method of protection against malaria has been practiced for years in many tropical countries. The St. Louis Southwestern proposes, during the oncoming malaria season, to supply quinine free of cost to employees on certain work who express a desire to help themselves to have good health.

The company hospital records show that for the months of May and October inclusive, 1916, the following classes of labor contributed 79 per cent of the malaria cases:

Section laborers	44 per cent
Extra gangs	11 per cent
Bridge and building department	13 per cent
Engineers, firemen and brakemen	7 per cent
Car repairers	4 per cent
Total	79 per cent

Proper screening of sleeping cars and the use of quinine will certainly reduce the rate of malarial infection among the extra gang and bridge and building employees. On the other hand the section hands, aside from those who live in well screened company houses, must either expend their meager earnings for screens or avail themselves of the offer of free quinine. A large portion of the section hands are ignorant Mexicans and negroes. This class of labor is responsible for nearly one-half of the malaria cases at the hospital, although representing less than 15 per cent of the total number of railway employees. The demonstration of the use of quinine on them will be very carefully watched, for this means of health protection permits of almost unlimited expansion among the thousands on thousands of similar laborers on railways in the south.

Dr. R. C. Derivaux, medical officer in charge of malarial investigation of the U. S. Public Health Service, in his recent publication dealing with a quinine immunization experiment on a number of families living on large plantations, writes that at Lake Village, Ark., "quinine was given

237 persons for immunization, and a reduction in malaria of 64.45 per cent obtained as ascertained by repeated parasite index examinations." This demonstration was carried on jointly by the International Health Board and the U. S. Public Health Service.

American Railway Engineering Association Committee Work

SIX NEW CHAIRMEN have been selected for standing committees of the American Railway Engineering Association for the coming year, while 16 chairmen have been held over. G. J. Ray, chief engineer D., L. & W., succeeds John D. Isaacs, consulting engineer S. P., as chairman of the Rail committee. Mr. Ray is succeeded as chairman of the Track committee by John R. Leighty, engineer of maintenance of the M. P. W. H. Hoyt, assistant chief engineer of the D., M. & N., has been made chairman of the committee on Wooden Bridges and Trestles, following E. A. Frink, principal assistant engineer S. A. L. W. H. Finley, president C. & N. W., has been appointed chairman of the committee on Rules and Organization, succeeding Joseph Mullen. The Yards and Terminal committee is headed by B. H. Mann, signal engineer M. P., who succeeds E. B. Temple, assistant chief engineer P. R. R. C. M. Taylor, superintendent of treating plants of the C. R. R. of N. J., is placed in charge of the work of the committee on Wood Preservation, succeeding Earl Stimson, engineer maintenance of way B. & O.

Owing to the nature of the subjects assigned to the committees for investigation and to the fact that not more than two topics can be reported to the convention for action in any one year, many of the subjects considered last year have been carried over. Among the new subjects assigned to the committee for investigation during the present year are the following:

BALLAST—Study and report on the design of gravel washing plants; study and report on the design of stone-crushing plants.

BUILDINGS—Report on detail designs of buildings used for housing track labor. Report on the efficient and economical methods of electric lighting of (a) Passenger station interiors; (b) Passenger station surroundings; (c) Platforms, covered and uncovered. Report on modern types of toilet facilities at small stations where water supply and sewers are lacking.

WOODEN BRIDGES AND TRESTLES—Report on classifications and grading rules for all lumber and timber used in the construction and maintenance of way departments of railways. Report on specifications for construction timbers and building lumber. From these studies draw up in unified form a set of specifications for construction timbers and building lumber for use on railways, showing each kind and quality of lumber or timber which is suitable for each of the different classes of work on a railway. Report on specifications for timber which is to be treated with a preservative substance.

MASONRY—Report on different methods of depositing concrete under water. Report on the disintegration of concrete and the corrosion of reinforcing material in connection with the use of concrete in sea water. Prepare specifications for slag aggregate. Report on (1) the effect upon the strength and durability of concrete not having a sufficiency of moisture present throughout the period of hardening as compared with concrete fully supplied with moisture; (2) methods of providing moisture during this period; (3) remedy for concrete hardened with insufficient moisture.

SIGNALS AND INTERLOCKING—Report on Automatic Train Control. Report on methods in use for short-circuiting track circuits for the display of signals for the protection of track workers. Report on the application of aspects indicating that No. 19 or No. 31 orders are to be delivered. Submit a code of signal rules. Investigate and report on the subject of the proper time interval for the release of electrical and mechanical devices applied to signal or switch apparatus.

RECORDS AND ACCOUNTS—Report upon forms for analyzing expenditures for assistance in controlling expenditures.

RULES AND ORGANIZATION—Prepare rules for the construction, maintenance and operation of buildings and protective apparatus for the reduction of fire risk. Prepare rules for the inspection of bridges and culverts.

WATER SERVICE—Report upon plans and general specifications for typical water station layouts. Study locomotive flue failures which may be due to improper water conditions and report upon methods of treatment to correct such conditions.

YARDS AND TERMINALS—Report on unit operation of railway terminals in large cities. Report on the handling of freight in double-deck freight houses and the cost of operation. Also report on the handling of freight by mechanical means. Report on the advantages of a small sorting yard with grades sufficient for gravity switching to be located between the classification yard and advance pocket for the purpose of switching trains into station order.

IRON AND STEEL STRUCTURES—Report upon the use of plastic compounds for the protection of steel work exposed to the blast action from locomotive stacks. Secondary stresses and impact. (a) Report definite principles for design to reduce secondary stresses and rules for computing or allowing for them. (b) Study and draw conclusions from records of impact tests. (c) Continue impact tests and stress measurements as funds may be available. Report on the design, length and operation of turntables. (a) Report specifications for the design of turntables and turntable pits. (b) Report specifications for metal for turntable roller and disc bearings. Report on principles for detailed design of flashing, drainage and reinforcement for waterproofing purposes. Report on track scales superstructures.

WOOD PRESERVATION—Report on preservative treatment for Douglas fir. Report on indicators for determining the Burnettizing of ties and timbers.

ECONOMICS OF RAILWAY OPERATION—Report on methods for increasing the capacity of a railroad. Collect data on operating costs from available sources, including rate case investigations necessary to a complete analysis of operating costs. Report on the effect of speed of trains upon the cost of track maintenance. Report on the economic length of operating districts. Report upon the allocation of maintenance of way expenses to passenger and freight service. Report on the reclamation and utilization of scrap material.

ECONOMICS OF RAILWAY LABOR—Report on plans and methods for organizing to obtain labor for railways. Report on methods of equating track sections. Report on typical plans for boarding cars and boarding houses for railway laborers. Study the matter of establishing proper relations between a unit of track expenditure and a unit per mile of line for different classes of road for the purpose of determining a normal maintenance expense and to obtain, as far as possible, uniform conditions involving: (a) Separation of expenses as between road, signal and bridge and building departments. (b) The determination of the ratio of labor cost to total cost. Report on labor-saving devices.

EQUIPMENT EXPORTS FROM ENGLAND.—The British Board of Trade returns show that the exports of railway material for the first four months of the present year were: Locomotives, valued at $2,584,840, as compared with $2,362,560 in the same period of 1916; rails, $1,188,775, against $1,218,640, and cars, $2,321,210, as compared with $1,263,770 in 1916.

American Society for Testing Materials

Reports on Bearing Metals, Steel Tie Plates and Structural Steel for Cars—Dr. Marburg's Death

THE TWENTY-FIRST annual meeting of the American Society for Testing Materials was held at the Hotel Traymore, Atlantic City, N. J., June 25 to 28, 1918. The work of the society during the past year was somewhat curtailed due to the extraordinary conditions prevailing. Many of the changes made in the specifications were of a minor nature. The following is an account of the more important ones of interest to railway men:

Proposed Specifications* for Bronze Bearing Metals for Turntables and Movable Railroad Bridges

These specifications cover four classes of bronze-bearing metals for turntables and movable railroad bridges.

The purposes for which these classes are frequently used are as follows:

Class A, for contact with hardened steel disks under pressures over 1,500 lb. per sq. in., for example, bearing metals, used in turntables and center-bearing swing bridges;

Class B for contact with soft steel at low speeds under pressures not over 1,500 lb. per sq. in., for example, trunnions and journals of bascule and lift bridges;

Class C, for ordinary machinery bearings;

Class D, for gears, worm wheels, nuts and similar parts which are subjected to other than compressive stresses.

The bronze shall be a homogeneous alloy of copper and tin. The copper shall conform to the requirements of the standard specifications of the American Society for Testing Materials. The bronze shall be made from new metal, except that scrap of known composition produced by the foundry at which the bronze is cast may be used.

Care shall be exercised that the metal is not overheated, and that the temperature at pouring and the conditions of cooling are such as will be most likely to secure dense castings.

The bronze shall conform to the following requirements as to chemical composition:

	Class			
Elements considered	A	B	C	D
Copper, per cent...	Remainder	Remainder	82 (max.)	89 (max.)
Tin, per cent.....	about 20	about 17	11	11
Lead, per cent.....	.....	.....	about 10	.....
Zinc, per cent.....	.....	.....	.....	2.25 (max.)
Iron, per cent.....	.....	.....	.....	2.25 (max.)
Phorphorus, per cent	not over 1.0	not over 1.0	0.7-1.0	.....
Other elements, per cent	not over 0.5	not over 0.5	not over 0.5	not over 0.5

The bronze shall conform to the following requirements as to compressive and tensile properties:

	Class			
Properties considered	A	B	C	D
Compression				
Deformation limit, lb. per sq. in.....	25,000-40,000	19,000-23,000	12,000-17,000	about 14,000
Permanent set in 1 in. under 100,000 lb. per sq. in., in.....	0.06-0.10	0.12-0.25	.....	.....
Tension				
Yield point, min., lb. per sq. in.....	.....	.....	.....	15,000
Tensile strength, min., lb. per sq. in.....	.....	.....	.....	30,000
Elongation in 2 in., min., per cent.....	.....	.....	.....	14

The deformation limit in compression shall be determined as that load which produces a permanent set of 0.001 inch in the compression test specimen described in Section 6 (b).

The yield point in tension shall be determined as the stress producing an elongation under load of 0.5 per cent—that is, 0.01 in. in a gage length of 2 in.

A test bar of the form and dimensions shown (0.57 in. diameter for a length of 2⅛ in.) to be used for the tension test specimen, and a suitable test bar for the compression test specimen, shall be an integral part of the casting, and shall be fed and cooled under the same conditions as were the castings.

Compression test specimens shall be cylinders 1 sq. in. in cross-sectional area and 1 in. high.

Tension test specimens, turned from the test bar shall be ½ in. diameter for a length of 2¼ in. The ends shall be of a form to fit the holders of the testing machine in such a way that the load shall be axial.

The castings shall be sound, clean and free from blowholes, porous places, cracks and other defects.

*Portions treating of administrative matters of inspection, tests, etc., omitted.

On Non-Ferrous Alloys for Railway Equipment

G. H. Clamer, chairman of the subcommittee of the committee on Non-Ferrous Metals and Alloys, recommended that certain changes be made in the tentative specifications for non-ferrous alloys for railway equipment in ingots, castings and finished car and tender bearings (B 17-17 T),† by which the four bearing metals (Nos. 1 to 4, inclusive) shall be changed to three.

The following facts were presented before the meeting of the main committee:

1. The desirability of having a hard alloy for those bearings which are subjected to alternating or impact loads is now well recognized. That such an alloy is desirable was supported by evidence presented by the chairman, and by the correspondence of Messrs. W. M. Corse, W. K. Frank, H. V. Wille and J. C. Ramage—all members of Sub-Committee VI—and also by the correspondence of J. T. Wallis, general superintendent of motive power, Pennsylvania Railroad.

2. The desirability of using a softer alloy than Bearing Metal No. 2 for driving brasses, truck brasses and hub liners, was agreed to.

3. The committee was practically unanimous in its opinion that the zinc content in Bearing Metal No. 4 is too high for best practice, and favored a compromise between alloys Nos. 3 and 4.

The committee recommends that the specifications be amended as indicated below, and continued as tentative because there is still some doubt as to the proper limits of composition for the alloys:

1. Change the first three paragraphs of Section 1 (b) to read:

"(b) These alloys and the purposes for which they are used are as follows:

"Bearing Metal No. 1, for connecting rod bearings, bushings, eccentric straps, crosshead gibs, and miscellaneous bushings;

"Bearing Metal No. 2, for driving box bearings, engine truck and trailer bearings, and hub liners;

"Bearing Metal No. 3, for lead-lined bearings, for locomotive tenders, freight and passenger car equipment."

2. Change the table of chemical composition from its present form to read as shown in the table on the following page.

The requirements covering Babbitt Metal and Lining Metal have been revised to conform with alloys Nos. 7 and 9, respectively, of the proposed Tentative Specifications for White Metal Bearing Alloys (known commercially as Babbitt Metal), referred to under the heading "Sub-Commitee

†Proceedings, Am. Soc. Test. Mats., Vol. XVII, Part I, p. 610 (1917).

IV—On White Metals," and appended to this report. The requirements covering Bell Metal are unchanged.

It will be noted that in Bearing Metal No. 1, phosphorus is not considered an impurity and can be specified at the option of the purchaser.

AMENDED TABLE OF CHEMICAL COMPOSITION

Alloy	Copper, per cent	Tin, per cent	Lead, per cent	Zinc, max., per cent	Iron, max., per cent	Antimony, per cent	Phosphorus, max., per cent	Sulphur, max., per cent	Arsenic, max., per cent	Total Impurities, including zinc, max., per cent
Bearing metal No. 1	remainder	9-11	9-11	0.75	0.25	0.25*	1.0†	....	....	1.0
Bearing metal No. 2	remainder	4-6	23.5-26.5	0.75	0.40	0.50*	....	....	....	1.5
Bearing metal No. 3	remainder	4-6	17-22	2.50	0.40	0.50*	....	....	....	3.0
Bell metal	remainder	16-18	0.25*	0.25	0.25	0.25*	0.02	0.05	....	0.50
Babbitt metal	0.50*	9.25-10.75	remainder	none	....	14-16	....	....	0.20	0.75‡
Lining metal	0.50*	4.50-5.50	remainder	none	....	9.25-10.75	....	....	0.20	0.75‡

*Maximum.
†Not considered an impurity, and can be specified at option of purchaser.
‡Must not contain zinc.

[Note—After this report was read a strong plea was made to increase the total impurities in Bearing Metals Nos. 1 and 2 to 2 per cent was made, but after considerable discussion it was decided to leave it as it was presented by the committee.—EDITOR.]

Specifications for Steel Tie Plates

Revised specifications for steel tie plates were submitted which differ from those appearing in the report of last year's convention (*Railway Age Gazette*, July 6, 1917, page 13), in regard to the chemical properties and physical tests. The paragraphs as to chemical properties are given in full below:

The steel shall conform to the following requirements as to chemical composition:

Bessemer	Soft grade	Medium grade
Carbon, per cent	not under 0.06	not under 0.12
Phosphorus, per cent	not over 0.10	not over 0.10
Open-hearth		
Carbon, per cent	not under 0.12	not under 0.20
Phosphorus, per cent	not over 0.06	not over 0.06

A carbon determination shall be made of each melt of Bessemer steel, and two analyses every 24 hours representing the average of the elements carbon, manganese, phosphorus and sulfur, contained in the steel, one for each day and night turn respectively. These analyses shall be made from drillings taken at least ⅛ in. beneath the surface of a test ingot obtained during the pouring of the melts. The chemical composition thus determined shall be reported to the purchaser or his representative, and shall conform to the requirements specified in the table.

An analysis of each melt of open-hearth steel shall be made by the manufacturer to determine the percentages of carbon, manganese, phosphorus and sulfur. This analysis shall be made from drillings taken at least ⅛ in. beneath the surface of a test ingot obtained during the pouring of the melt. The chemical composition thus determined shall be reported to the purchaser or his representative, and shall conform to the requirements specified in table.

An analysis may be made by the purchaser from a finished tie plate representing each melt of open-hearth steel and each melt or lot of 10 tons of Bessemer steel. The carbon content thus determined shall not be less than that specified in the table and the phosphorous content shall not exceed that specified in the table by more than 20 per cent.

The innovation concerning the physical properties lies in the elimination of all reference to tensile tests and the method of making them. Instead bending tests are required as given in detail below.

The bend test specimens shall bend cold through 180 degrees around a pin the diameter of which is equal to the thickness of the specimen for the soft grade, and to twice the thickness of the specimen for the medium grade, without cracking on the outside of the bent portion.

Bend test specimens shall be taken from the finished tie plates, or from the rolled bars; and longitudinally with the rolling. They shall be rectangular in section, not less than ½ in. in width between the planed sides, and shall have two parallel faces as rolled. They shall be free from ribs or projections. Where the design of the tie plates is such that the specimen cannot be taken between the ribs or projections, these ribs or projections shall, in preparing the specimen, be planed off even with the main surface of the tie plate.

If preferred by the manufacturer and approved by the purchaser, the following bend test may be substituted.

A piece of the rolled bar shall bend cold through 90 deg. around a pin the diameter of which is equal to the thickness of the section where bent for the soft grade, and to twice the thickness of the section where bent for the medium grade, without cracking on the outside of the bent portion.

One bend test shall be made from each melt of open-hearth steel, or from each melt or lot of 10 tons of Bessemer steel.

If any test specimen shows defective machining or develops flaws, it may be discarded and another specimen substituted.

The Rail Situation

Weight of Sections—Some of the railroads that have increased the weight of section, particularly where this is decidedly over 100 lb. per yd., report the greatly reduced cost of track maintenance and a reduction in the number of failures as well as better riding track. One of these roads now has in contemplation a section weighing 200 lb. per yd. While this weight of section may be extreme and only to be considered by roads having extremely dense traffic and the heaviest wheel loads, the tendency toward heavier sections seems to be general.

Heat-treated Rails—From time to time experiments have been made in the quenching and annealing of rails, sometimes of standard sections and sometimes of sections slightly modified to better meet the stresses incident to quenching. The rails when put in service generally showed markedly greater resistance to abrasion, but some failed due to brittleness in track. There are now in track, at points where the service is particularly severe, quenched and annealed rails which have not proven brittle, although they carry very heavy traffic under severe service conditions on heavy curves. The results of these tests indicate that the heat-treated rails may have a future.

Structural Steel for Cars

At the request of the Tank Car Committee of the Master Car Builders' Association and other interested consumers, the committee has given careful consideration to specifications for plates for welding. The question was referred to Sub-Committee II (Committee on Steel) which held two meetings at which specifications now in use by welding companies were presented for consideration and discussion. In pursuance of the report of this sub-committee, the committee recommends that requirements for "plates for forge welding" be

incorporated in the Standard Specifications for Structural Steel for Cars (A 11-16), as indicated below and referred to letter ballot for adoption as standard.

1. *Section 3.*—Add the following chemical requirements to apply to "Plates for forge welding":

Manganese		0.40-0.60 per cent
Phosphorus	Acid	not over 0.04 per cent
	Basic	not over 0.04 per cent
Sulphur		not over 0.045 per cent

2. *Section 6 (a).*—Change the heading of the last column of the table to read (italics are new) "Plates for cold pressing *and forge welding,*" which makes the following tensile properties applied to plates for forge welding:

Tensile strength, lb. per sq. in.	48,000-58,000
Yield-point, min., lb. per sq. in.	0.5 tens. str.
Elongation in 8 in., min., per cent	$\frac{1,500,000}{\text{Tens. str.}}$, with

the same modifications which apply to plates for cold pressing.

3. *Section 8 (b).*—Change to read as follows by the addition of the italicized words and the omission of the words in brackets:

"(*b*) The test specimen for rivet steel, [and] *for* plates for cold pressing, *and for plates for forge welding,* shall bend cold through 180 deg. flat on itself without cracking on the outside of the bent portion.

Modified Steel Specifications Being Used Under Present Industrial Conditions

The attention of Committee on Steel was called to the fact that in many cases purchasers had allowed temporary modifications of standard specifications, thereby permitting the shipment of material that ordinarily would not fall within the limits of the specifications as to chemical or physical properties. The committee was of the opinion that this temporary adjustment of the standard specifications to meet unusual industrial conditions offered an excellent opportunity to study the effects of such departures from standards upon the performance of the material in service, and to collect all of the data available from such study so that the results may be before the committee for use when considering revisions in existing standards. With this in mind, the committee directed its sub-committees to compile, in so far as possible, an adequate record of the service of material purchased under any of the committee's specifications which may be thus modified by special agreement.

The following resolution was also adopted and it is the hope of the committee that purchasers and producers generally will co-operate by making available to the committee all data which may be accumulated:

"Committee A-1 on Steel recognizes the difficulty now existing under the stress of war conditions in securing an adequate supply of material under the standard specifications for steel adopted by the society. It has been considered more desirable, however, for variations from these specifications to be arranged between the manufacturer and the purchaser as applying to individual cases, than for the society to make general changes in the specifications under the present unsettled conditions. An adequate record should be kept of the service rendered by material purchased under such arrangements, in order that the data may be available when revisions of the specifications are under consideration later."

Lubricants

The committee feels that the need of an evaporation test for lubricating oils has not been demonstrated. In view of the results obtained, which indicate that concordant results cannot be obtained unless the conditions as to air bath, method of heating, size and shape and materials of dishes used, method of placing dishes in the air bath and location of the thermometer bulbs, are identical, no further work on evaporation will be done by the committee until the need of such a test is shown.

The committee respectfully recommends to the Society the adoption as standard of the following tests included in the Tentative Tests for Lubricants (D 47-17 T) presented last year and published in the proceedings:*

Specific gravity, revised to read as follows by the addition of the italicized words:

Specific gravity may be determined by hydrometer, Westphal balance, or pyknometer, providing these instruments are verified. The observation shall be taken with the sample at 15.56 deg. C. compared with water of the same temperature. *Correction for the buoyant effect of the atmosphere shall be made when necessary.*

Cloud and Pour Test for Petroleum Oils except Steam Cylinder and Black Oils;

Cold Test for Steam Cylinder and Black Oils;

Free Acid; Carbon Residue.

The committee further recommends that "standard temperatures for viscosities" contained in the Tentative Tests submitted last year be withdrawn. In explanation of this recommendation, the committee believes that while eventually the adoption of these standard temperatures will be desirable, such adoption is not feasible at the present time. The use of the Fahrenheit temperatures 70 deg., 100 deg., 130 deg. and 210 deg. represent the common American practice. The committee's temperatures were approximate Centigrade temperatures approaching these as near as would be possible in round figures. At the present time, however, due to war conditions, not only has the use of the Fahrenheit temperatures greatly increased in this country, but these temperatures have also been adopted abroad—for instance, by the British government—and it is the feeling of the committee that an attempt to change the standard temperatures at the present time would result in confusion in the specifications for oils for the various governments and might tend seriously to delay matters looking toward the successful prosecution of the war. The committee anticipates that at a later date it will again present these temperatures for adoption as standard by the society.

Death of Doctor Marburg

The death of Dr. Edgar Marburg, the secretary of the society, occurred on June 27 at his home, during the time the meeting was held. The news of Doctor Marburg's death was received at the meeting with a great deal of sadness, as the members realized that the society had lost a very ardent worker. Doctor Marburg was the head of the Civil Engineering School of the University of Pennsylvania and spent considerable time and hard work on the affairs of the society. He was born in 1864 and was graduated from the Rensselaer Polytechnic Institute in 1885. He had in the past few years worked very diligently for the society, and his services have been highly appreciated. Doctor Marburg had been ill for about two years with heart and kidney trouble and was at the time of his death on leave of absence from the University of Pennsylvania on account of ill health.

Other Business

Among other things considered at the meeting were the topical discussion on Co-operation and Industrial Research in which Dr. Henry M. Howe, Dr. John Johnston, Dr. Arthur D. Little, Dr. Charles L. Reese and Mr. Frank E. Gorrell participated; a paper on The Effects of Grating of Sands and Consistencies of Mix Upon the Strength of Plain and Reinforced Concrete, by L. N. Edwards, which supplements his paper on the same subject presented at the last annual meeting, and a paper on Variable-Pressure Method for the Measurement of Viscosity, by E. C. Bingham.

The following officers were elected for the ensuing year: President, G. H. Clamer; vice-president, George S. Webster;

*Proceedings, Am. Soc. Test. Mats., Vol. XVII, Part I, p. 767 (1917).

members of executive committee, G. Aertesen, G. K. Burgess, G. B. Heckel and K. W. Zimmerschied. No action was taken at the meeting toward the appointment of a secretary-treasurer on account of the death of Doctor Marburg.

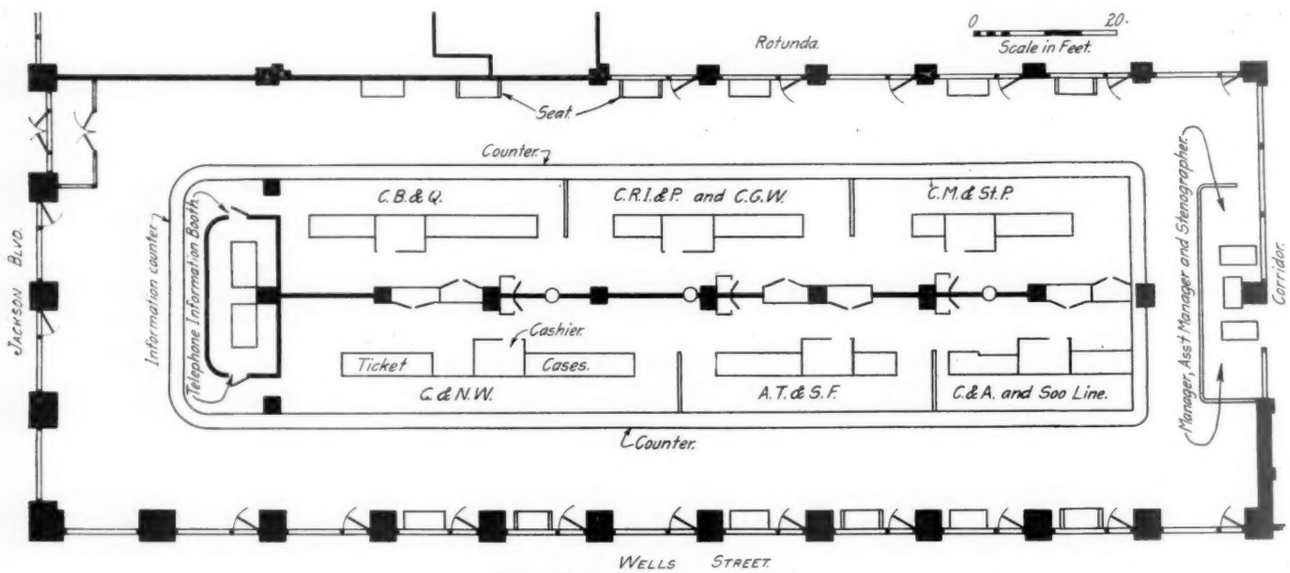
Investigation of the Ivanhoe Collision

A JOINT investigation of the Ivanhoe, Ind., wreck, which occurred on the Michigan Central on the morning of June 22, was held, behind closed doors, by the Public Service Commission of Indiana, and the Interstate Commerce Commission, at Hammond, on Thursday, June 27. The Interstate Commerce Commission was represented by G. E. Ellis, signal engineer; G. E. Starbird, safety appliance inspector, and W. D. Anderson, hours-of-service inspector. The Indiana Public Service Commission was represented by John W. McCardle, who was chief of the joint commission; Edward M. Corr, and D. Matthews, chief inspector for the Public Service Commission. The engineer, fireman and head brakeman of the circus train and the signal man at Ivanhoe Tower, were examined by the commission in the morning. The signal engineer, signal supervisor and signal foreman on this particular territory of the Michigan Central, the conductor and the flagman of the circus train and the conductor and two brakemen of the troop train were examined in the afternoon. The attorney representing Alonzo Sargent, engineman of the troop train and his fireman, Gustav Klauss, declined to permit them to testify before the commissions as they are under indictments. The commissions did not insist on the men testifying. After the investigation Mr. McCardle advised that nothing was brought out at the hearing beyond what was published in the June 28 issue of the *Railway Age*. He stated that the equipment was all right, that the flagman of the circus train and the rest of this train crew were blameless; and the accident was due to the engineman of the troop train being asleep or dozing.

One of the mysteries which will perhaps remain unsolved in connection with this wreck is the death of Trainmaster Whipple of the Michigan Central. The flagman testified that when the circus train came to a stop and as he was dropping off to go back and flag, the trainmster was in the door of the caboose. Nothing more is known of what happened to him, but the supposition is that the trainmaster assumed that the empty equipment train would stop and had started back through the caboose and that when the engine struck the caboose, he was driven into the other cars. No trace remains of him. Fifty-nine bodies have been recovered in the wreck and taken to Lake County, Ind., morgues. Of these only 15 were identified.

Consolidated Ticket Office At Chicago

WORK ON THE CENTRALIZED ticket offices of the railroads entering Chicago is progressing and will probably be completed some time in August. The consolidated office will be located in the Insurance Exchange building, Jackson boulevard, Sherman and Wells streets, where the entire first floor has been reserved for that purpose. The new office will be in two separate sections, which will be connected by the central lobby of the building. The western section, a plat of which is shown in the illustration, has been assigned to Western railroads and the eastern section to Eastern lines. Each section contains 10,000 sq. ft. of floor space and will be identical in plan. As indicated in the diagram, each office will contain six booths, located in the middle of the room, and will be surrounded on all sides by a lobby which is 11 ft. wide at the narrowest point. At one end of the counter there will be located an information telephone booth and an information counter which will be manned by separate forces to insure efficient service to the public. At the south end of each room will be located the office of the manager, who will have general supervision over the entire ticket office.



Floor Plan of Western Section

Each booth will have its own cashier, its own Pullman diagram, its own reservation desk and its own force of clerks. A telephone exchange, which will be installed on the fourth floor of the building, will connect the public with the information booths or directly with the ticket booths of the individual roads, as the occasion may demand. The booths in each section will be entirely surrounded by a counter 132 ft. in length. Nineteen different entrances opening to the street and to the lobby of the building will provide ready access to the offices. Pay telephone stations and writing tables will be installed on the sides of the room for the convenience of the public. The offices will be lighted by the indirect system. The furnishings of the western section will be finished in mahogany, as this will permit the maximum use of furniture now in the separate offices of the railroads. According to

present plans the woodwork in the eastern section will be finished in fumed oak.

The individual railroads will use entire ticket booths or share them with other lines, according to their amount of passenger business. The allotment of space among the Western lines is indicated in the diagram.

In the eastern section the northeast booth will be occupied jointly by the New York Central and the New York, Chicago & St. Louis, the central booth on the eastern side of the office will be occupied by the Michigan Central and the Cleveland, Cincinnati, Chicago & St. Louis, and the southeast booth has been allotted to the Illinois Central, the Chicago, Indianapolis & Louisville, and the Chesapeake & Ohio. The northwest booth will be occupied by the Pennsylvania Lines, the central booth on the western side by the Baltimore & Ohio, and the Pere Marquette, and the southwest booth by the Grand Trunk, the Chicago & Eastern Illinois, the Erie, and the Wabash.

The installation of the ticket office for Western lines is being carried on under the direction of J. Francis, general passenger agent of the Chicago, Burlington & Quincy, and the work in the Eastern section is being done under the supervision of L. W. Landman, general passenger agent of the Michigan Central at Chicago.

The Duty of Railroad Accounting Officers*

Preservation of Company Individuality Now Lying Dormant Should Be Every Officer's Aim

By R. A. White
General Auditor, New York Central

As I look at it, federal control came about through the inexorable laws of mechanics—when an irresistible force meets an immovable body something is bound to happen. The railroad industry is the only private enterprise which is not permitted to control either its expenses or the selling price of its product. When expenses are moving far more rapidly than the body which has been petitioned for a selling price to meet the expenses, there is bound to arise an extremely strained situation.

This, in itself, was bad enough, but under war conditions the railroad situation became a national matter, and something had to be done. Of course the railroad situation would have been relieved within a reasonable length of time after the railroads had been granted a living income, but by that time the war might have been over, and waiting was out of the question so long as the immovable body still retained its marvelous immobility and the Gordian knot was still tied as tightly as ever. When a Gordian knot is principally tied of red tape, it has to be cut, and an irresistible force was about due, and it came in the shape of a proclamation by the President of the United States. You will recall that he stated that the railroads had not fallen down through any fault of their own but that conditions were such as to call for a unified control of operations, and in order to accomplish that, and as a war emergency measure, he had assumed such control over their operations.

While it always hurts to be the subject of criticism, no one can deny that the railroads were in a bad way, and even the elements seemed to co-operate in tying matters up, so no one could complain either of what was done or the way it was done. In fact, it looked like help, because instead of a very large number of government representatives exercising their presumptive right to demand priority for their individual shipments, the railroads got one government director who was to decide what was really to get priority rights, and we heaved a sigh of relief, particularly when it stopped snowing.

Then the press, especially those papers which for some cause believe it a duty to try in every way to incite class hatred, began to rave about the people coming into their rights, about the end of abuses by railroad magnates, about the beauties of government ownerships, and all those other catch-phrases that tend to circulate a catch-penny sheet among the unthinking, and we, who know the railroad business as it really is, were hurt and depressed, and even disgusted and angry.

But, fortunately, most men have a sense of humor and there is a funny side to all this. When you try to reconcile the views expressed in some of the press with the facts, and search in fairness for the equity of the views, I am irresistibly reminded of a story an English friend of mine told me some years ago. A friend of his, a barrister, was pleading before a judge and was constantly over-ruled on each point of law as he raised it. Finally he said with tears in his voice, "Your Honor, I seem to be unfortunate on my points of law, but at least you will admit the equity is in my favor." The judge smiled a sort of superior smile, and leaning forward and looking over his glasses, said: "Mr. Cholmondeley, when you speak of your equity in this case, you bring to my mind a picture of a blind man—in a dark room, looking for a black cat—that is not there."

Then Congress passed the act directing the President to execute a co-operative agreement with the owners of each property as to the use thereof, and we unbent our wrinkled brows, and smiled again. It looked as if after all we might only have, at the most, a careful and responsible tenant, who agreed to turn the property back in as good condition as when he began to run it. Up to date the leases have not been signed, however, and when we consider some of the suggestions that have been made, one begins to wonder again, in the words of a former U. S. senator, where we are "at."

But what I think we all want to do is just this—consider that all this is a war emergency measure and that war changes pretty nearly everything. We must win the war—everybody is united on that—and if anything is necessary to win the war, it must be done, even if it upsets all our preconceived ideas, based on life training, of order, method or logic. And so it is up to us to back up every move that is meant to help win the war, and go the limit unless it proves unworkable, then help to change it and make it work.

Occasionally we encounter a spirit of pessimism. Some men say "What's the use of initiative any more? There's no competition," and "what's the use of saving? It's the government's money." Discourage this wherever you meet it. Of course competition is gone, and of course competition is the greatest spur to progress and development. But a higher and holier incentive than competition calls now to do each his level best—patriotism. You don't need to remind railroad men of their loyalty to their country—look at the railroad

*From an address which was prepared for the Annual Meeting of the Railway Accounting Officers' Association, May 29, 1918, but which Mr. White was prevented from delivering because of the pressure of other duties.

men who have offered their lives, if needed, in enlisting for active service—look at the work that is being done by those either not eligible for active service or else needed more for railroad operation—look at the railroad subscriptions to the Liberty Loans, and to the Red Cross funds, and you can see where railroad men, and railroad women, stand on patriotism! And this spirit must be maintained and encouraged.

Besides the enthusiasm of this great incentive, there is a thought that each of us ought to take home and keep with him constantly—those properties have been built up through years of thought and effort, of risk and daring, of struggle and achievement, of sacrifice and expansion, of competition and co-operation, until they are absolutely indispensible to the development, prosperity, even the safety of the nation. And it is not the rails, the cars, the engines that have brought this growth—these are but the muscles of the body organic—without initiative, intelligence or responsibility. The muscles must be guided by the brain, and it is the organization that is the brain of the corporation. This relationship between the muscles and the brain, between the plant and the human element, is like the spinal cord in the human body, which acts as the main power transmission line; the spirit of corporate loyalty and co-operation in a thoroughly welded organization is the spinal cord of efficiency.

Our duty, therefore, is to sit tight, stiffen the loyalty and maintain the efficiency so that the government may at the termination of its control restore the property in as good condition as when it received it—that is with the tracks true and well ballasted, the cars and engines staunch and capable, but, above all, an unchanged organization, for tracks and roadbed, cars and engines, can be gotten any time, but a firmly welded organization once weakened can never be replaced. An organization is not a mere assemblage of unrelated individuals; an organization is made up of experts in their selected lines, each of whom has qualified himself by study, thought and experience, to fit his part of the machine to work harmoniously with all the rest. And it is not the mere fact that each head can tell his subordinates what to do that makes him valuable to the corporation, but the fact that his life work has told him the difficulties that had to be avoided and the problems that had to be solved, and gave him the ingenuity and the power to steer through all these obstacles.

Any man can be replaced *in time* by another man who can do just as well, but no other man can ever know all the experiences the original man had, or even remember the things he had forgotten. So each of us should strive in every way possible to hold together the organization that experience has proved is best fitted to the success of the individual property. If the war means doing some other kind of work, or doing our usual work some other way, tackle it cheerfully and loyally. If technical work is reduced, don't let the experts go—use them somewhere else where they can help the government temporarily by doing some other needed work, and, later on, by preserving the integrity of the organization, which can only be done by keeping the employees together, and not letting go of those whose knowledge and experience is an invaluable asset to the corporation.

I spoke before of loyalty to the government—to back up the government and win the war, and every railroad man can be counted upon to do that. But there is a kind of loyalty and support that is the most dangerous kind of camouflage of disloyalty—dangerous because it is unthinking. I mean the spirit that pats a man on the back and agrees with everything he proposes or suggests, when the very briefest thought would show that a certain contemplated course might mean disaster. True loyalty would stop to think and would really help by pointing out the error in the thought and the disaster in the result, and suggest a better course.

Federal control is an accomplished fact by Act of Congress, and all railroad men have to do when orders are issued thereunder is to obey them. But every railroad man, as a patriot, has a further duty, and that is to protect the interests of the country by seeing that mistakes are not made and that the biggest industry in the country is not ruined through following the plausible but misleading suggestion of ignorant or prejudiced influences. Federal control under the provisions of the act and the language of the President's proclamation is only the intervention of an additional power over the operations of the individual properties to produce the results most beneficial to the conduct of the war, with due regard, however, to the protection of the rights and the investments of the owners under a possible radical diversion of traffic. To this no one should object—the eggs may be cracked and a little mixed, but not yet scrambled beyond recognition, If, however, under another administration or under other management, federal control became a stepping stone to government ownership, or if steps were pending at any time that would weaken or destroy an organization so that it could never be restored, then it is the duty of every patriot to point out the seriousness of the bunder, and that the harm done is not only to the individual property, but to the country, because the property of the country is the aggregate of the properties of individuals, the prosperity of the country is the sum of prosperity of its parts, and a loss in one is a loss to the total.

To my own mind, government ownership of railroads in the United States is as unthinkable and as un-American as German militarism. There is no country in the world which presents such a wide diversity of everything—nature, resources, climate, and all the other elements that tax man's ingenuity—as the United States. Naturally, there is no other country which has so thoroughly developed individualism because of the necessity of meeting the problems which arise from that diversity. The railroad industry may not have had its inception here, but the railroad industry has reached its highest development here, and the one incentive that has led to its highest development has been competition; and the power that has brought about that development is individuality. The German nation has brought militarism to the highest point of development in ruthlessness, efficiency and wooden obedience, but it has only succeeded in doing this by crushing all rivalry and competition and completely suppressing the individual.

American militarism differs from German militarism just as the American soldier differs from the German soldier. The strength of the American soldier, apart from the fact that he never fights except in a just cause, lies in the power of his individuality and in the fact that American militarism has always encouraged, not attempted to extinguish, individual thought and initiative.

To my mind, federal control differs from government ownership in much the same way. It may consolidate and unify the activities of different roads and remove the incentive of competition, but it still leaves a field for individual effort and initiative, although each may be dormant, waiting for the return of the properties.

Government ownership, however, would leave no field for competition, no chance for individual effort, no incentive for development. I do not believe government ownership is in the air now. I believe the framers of the federal control act and those in Congress who passed it, were sincere in making provision for the return of the control of the properties, but there is always a number of either ignorant socialistic or anarchistic writers to whom there is no more attractive class of financial investment for attack than the railroad industry. So there is always risk of the question being agitated unless the public can understand the true animus of the envious malice behind the propaganda, and the real danger of the suggestion, and railroad men ought to take every opportunity to point out what a death blow government ownership would be to the railroads, and what a stagnation to the development of the country would inevitably follow.

Circulars of Southern Regional Director

CIRCULAR LETTER NO. 274 asks the railroads to supply the local agents of the United States Employment Service regularly and systematically with information which the Department of Labor has requested as to the character of workers and the number wanted at each point of need, as the employment service has promised to see that every means possible is taken to fill the needs.

Circular Letter No. 276 suggests as information a plan recently adopted by the Norfolk & Western to prevent the overheating of corn in carloads on account of excessive moisture. In order to preserve it a hose and pipe were connected to air pressure tanks and compressed air at a pressure of from 70 to 90 lb. was blown through the corn at various points in the car. During the hour that the operation was being conducted, the temperature was reduced from 107 deg. to 80 deg., with the result that the corn was saved.

Circular Letter No. 277 requests the latest obtainable information as to stocks of materials and supplies on hand and as to what officer is charged with the policing of this important matter, to see that unnecessarily large orders for any particular items are not being placed.

Circular Letter No. 278 suggests various methods of conserving machine tool steel, stating that a great economy in such supplies may be effected by having a careful inventory taken and by the introduction of tool-holders in shops, if properly used. A list is given of various firms who manufacture tool-holders and the suggestion is made that a special man be employed to visit the various shops and look over the expenditure for tool steel and the possibility of economy in various ways.

In Circular Letter No. 279 railroads are asked to submit promptly their recommendations as to the new locomotives each line will require for the year 1919.

Circular Letter No. 280 states that for the purpose of helping to conserve fuel and increase the efficiency of locomotive operation, it has been decided to put into effect a locomotive superheater schedule as follows:

1. Locomotives in shop receiving Class 1, 2 or 3 repairs will be superheated as material is available and labor conditions will permit.

2. Locomotives in freight or transfer service, having 30,000 lb. or more tractive power, and in passenger service having 25,000 lb. or more tractive power, will have preference, and locomotives with the longest prospective life will be first equipped.

3. If superheater material is on hand for locomotives not covered by the above ruling it should be used on smaller engines if not interchangeable with larger ones; the idea being to obtain the benefit of its use rather than to have it remain in stock because of not conforming to the above requirements.

Circular Letter No. 285 states that for the sake of uniformity and to avoid interference with program for repairs to locomotives of the United States Railroad Administration, locomotives of industrial concerns, contractors, logging roads and short line railroads not under government control are not to be repaired in shops of railroads under government control without the approval of Frank McManamy, manager, locomotive section, Division of Operation. Requests may be communicated by federal managers direct to Mr. McManamy and replies will be made through his office.

Circular letter No. 286 regarding the classification of employees under the selective draft law is as follows:

"You will recall that we were previously assured of the intention of the Provost Marshal General to have skilled and necessary railroad employees placed in Class II, and reserved to be drawn upon only as the exhaustion of Class I required it, or to supply the necessary skilled men for the operation of military railways. Those concerned were notified of this understanding in order that it might be generally known, and with the hope that it would largely protect the skilled and necessary employees against being drafted for general military service, and instead, reserve them for their work on the railroads, which is of such great importance to the conduct of the war.

"Unfortunately some of the district boards, which have jurisdiction over the matter of industrial classification, without any provision for appeal in any ordinary case so far as the existing regulations go, did not carry out this understanding, or were not broad in their construction of what sort of work should be included in skilled and necessary railroad employment. The result was that a large number of men who were considered skilled and necessary railroad employees have been placed in Class I.

"The names of such men sent in by you have been tabulated and arrangements made for presentation of the recapitulation to the War Department, with the hope that there may be a reclassification in the office of the Provost General, which will place many of these men in Class II, or some other deferred class.

"We cannot, however, undertake to take up individual cases as the men are called for service. In event a man who is a skilled railroad employee is called for service, and you will notify me as soon as possible after his call, giving the name of the man, the nature of his railroad work and experience, his order and serial numbers, the location of his draft board, the place at which and the date on which his orders call for him to report, will endeavor to make arrangements to have him assigned to military railway service. If this is done, it will, to that extent, lessen the call upon other skilled railroad employes who might be drafted for military railway service.

"It is perhaps well to repeat what I have heretofore written to some of you, namely, that if you hear of any cases where skilled railroad men have actually been placed into ordinary military service, I should be advised so as to try to get them into military railway service. I understand arrangements have been made to have the skilled railroad men who are called under the selective draft law sent to Camp Benjamin Harrison, and kept together to avoid their being placed in ordinary military service through error.

"It is not anticipated that the men who have been classified in Class II will be called, except as it may become necessary to do so to fill places in the military railway service for which men cannot be found among those who are already in military service, or who may be drafted from Class I."

Circular Letter No. 287 requests information in connection with passenger train car equipment as to the number of cars in service for various periods since last receiving classified repairs, including at least repainting or revarnishing of exterior, number of cars which can be given classified repairs per month with facilities available.

Circular Letter No. 290 asks for information to enable the administration to make a forecast of operating expenses for the current year. Each railroad is directed to send to the division of operation an estimate of the probable operating expense for the year, sub-divided by the major expense groups. The division of traffic is also asked for a similar forecast as to operating revenues. The forecast of expenses, therefore, is to be based upon the same assumption as to the volume of traffic and take into account the maintenance program, effect of wage increase, the possible further dilution of labor, cost of fuel and other materials, and the operating proportion of additions and betterments, also of any anticipated economies through federal control.

Circular Letter No. 291 directs the roads to take every precaution to insure strict observance of the safety appliance laws, saying that the Bureau of Safety reports many instances where cars are being moved in defective condition.

General News Department

Senator Thomas, of Colorado, has introduced in Congress, by request, a bill to require the use of an automatic electric cab signal and train-stopping device by common carriers engaged in interstate commerce.

V. R. Hawthorne, acting secretary of the Master Car Builders' Association and the American Railway Master Mechanics' Association, has transferred his office from 906 Karpen building to 746 Transportation building, Chicago.

No employee was killed on the Atchison, Topeka & Santa Fe during the 93 days from March 22 to June 22. The Santa Fe has approximately 50,000 employees, and during the corresponding period of 1917, nineteen of its employees were killed.

Free transportation for soldiers and sailors to and from their home towns, when on furlough, and also for employees of any department of the United States during the war and for six months afterward, would be authorized by a bill which has been introduced in Congress by Representative King.

The daylight zone investigation which is being made by the Interstate Commerce Commission is not yet finished, but the commission has issued an order that until further order, Mountain time shall be observed at all points on the line of the Chicago, Burlington & Quincy west of Curtis, Neb., to and including Sterling, Colo. This territory heretofore has been included in the Central zone.

The Boston Elevated Railway is now running trains through from Harvard Square, Cambridge. to Andrew Square, South Boston, through the recently completed "Dorchester tunnel." From Andrew Square to the corner of Washington and Summer streets the running time will be five minutes. The extension of the elevated road northward from Charlestown to Everett will probably be opened within a few months.

The Engineering Council, New York, an organization of national technical societies, has created a small special committee to study the question of the licensing of engineers. A few of the states have already passed laws on this subject and others are considering similar action. The work of this special committee is to advise engineering organizations regarding the course of procedure to follow in the states in which this subject is brought up.

Twelve Thousand Five Hundred Fifty-one head of live stock were killed on the right of way of the Atchison, Topeka & Santa Fe in the past two years, and the record is made the text of an exhortation to the employees, in the shape of a red, white and blue placard, to remember their personal duty to aid in the prosecution of the war by increasing production, speeding transportation, and stimulating manufactures. "Conservation of every article of food stuff must be kept uppermost in the mind of all transportation employees and through them kept before those who produce. The loss of food by these killings was great; let us all strive to reduce it."

The airplane mail carriers arrived in New York and Washington almost on schedule time throughout the last fifteen days in June, according to a statement issued by Postmaster General Burleson at Washington. The same statement contains a list showing the hour of arrival, at both terminü, for each day in June, and a large majority of the items show a fair speed record. On the eighth, the arrival in Washington was 9:15 p. m., and on the twelfth it was 6:05 p. m. These are the only days showing so serious a delay. This list shows an hour of arrival on every weekday in June; though, according to news notes printed in New York papers, there was no start from New York on June 1, June 7 or June 11.

Maximum prices for fir, logs and lumber, produced in the Pacific Northwest, to prevail during the three months beginning with June 15, have been determined upon by the Price Fixing Committee appointed by President Wilson. These prices are not to be exceeded on any sales or contracts either to the public or to the government; the allied nations or the railroads. Any additional cost for log freights occasioned by order No. 28 of the director general of railroads is to be added to the price fixed on logs so affected. Orders have also been issued regarding the disposition of the logs and lumber, and the government will apportion the car supply available for, and arrange for the transportation of logs and lumber subject to the allocation by the War Industries Board.

Government control of telegraphs is provided for in a resolution introduced in Congress on Monday, July 1. The resolution would authorize the President to take possession and control of any telegraph, telephone, marine cable or radio systems and to operate them subject to those conditions of law, so far as applicable, which are in force as to steam railroads under federal control, if in his discretion it is deemed desirable in order to insure their continuous operation, or to guard the secrecy of military and governmental communications, or to prevent communication by spies and other public enemies thereon, or for other military or public reasons. The resolution was introduced by Representative Aswell, of Louisiana, following the announcement that a strike of operators of the Western Union would be called on July 8. The proposed resolution is endorsed in a note by the President, as well as in letters by Secretaries Baker and Daniels and Postmaster General Burleson.

The Seventh avenue subway, New York city, which was opened from 42nd street, southward, to 33rd street about one year ago, is now in operation from 42nd street to the Battery, at the south end of Manhattan, and also to Wall street, by way of the Park place branch. This line is four-tracked from 42nd street to Chambers street, where the Park place branch diverges. Within a few weeks the Seventh avenue line is to be connected at its northerly end to the existing subways so as to make a through line on the west side of the city; while that part of the existing subway which lies on the east side of the city will be connected with the line on Lexington avenue. The existing line from the Grand Central Terminal, 42nd street and Fourth avenue, westward to Broadway, will become the cross-piece of the letter H, in the "H" system into which the old and the new subways will be combined. The Pennsylvania station, Seventh avenue and 33rd street, is now connected by subway directly with the downtown business district, with stations at Cortlandt and Rector streets on the west side; Fulton and Wall streets on the east side, and Broadway and Park place (Woolworth building and Postoffice). All these lines are operated, or to be operated by the Interborough Rapid Transit Company.

Assistant in Transportation is the title of an office for which the United States Civil Service Commission announces examinations on July 30. These are for men only. There are five vacancies in the Bureau of Markets, Department of Agriculture, Washington, at salaries ranging from $1,800 to $2,400 a year. The duties of appointees will be "to assist in the rendering of practical service to producers and distributers of farm commodities, especially live stock and perishable commodities, in every phase of the transportation problem, and to co-operate with both shippers and carriers in raising the standard of transportation service and in reducing the economic waste of foodstuffs in transit." Competitors must have had at least two years' experience in the freight-traffic department of a common carrier involving responsibility not less extensive than that of division freight agent, at least one year of which experience was had within the past five years. Each applicant must submit a thesis on each of three subjects. (1) A discussion of the marketing of

either perishable products or live stock, or both, as affected by the system of rail transportation in vogue in the United States; (2) a discussion of the changes thus far inaugurated by the director general of railroads with respect to the transportation of live stock and perishables, and an analysis of their economic value in comparison with the practices displaced; (3) a description of an organization for a railroad for assembling and disseminating information in regard to the movement of live stock and perishables. Applicants must be 25 to 50 years old.

General Travel Conditions

Hotels, steamship lines, and summer resort interests generally, have probably never before been so uncertain as to the probable volume of summer tourist traffic. Railway fares have been sharply advanced. The submarine warfare in our own waters and the German offensive toward Paris without doubt have had a depressing effect. The campaigns for strictest economy in personal expenditures, for the sale of War Savings Stamps, and for contributions to war funds, lead the most ardent summer vacationist to reconsider his summer plans. It seems probable that vacations will be limited to brief and relatively inexpensive sojourns not far from home. It does not follow that hotels, and the lake and river lines, may not have a good season, but it is likely that patronage, compared with former seasons, will be very largely local, and spending may be on a less liberal basis than heretofore.—*American Express Co.'s Travel Bulletin.*

No Employees Killed in 91 Days

Not a single employee was killed on the Atchison, Topeka & Santa Fe proper in 91 consecutive days, according to a circular issued by Isaiah Hale, commissioner of safety, on June 21. During the same period last year, namely from March 22 to June 20 inclusive, 19 employees were killed in accidents. Mr. Hale points to the record for this year as proof that a railroad can be operated without loss of life. His circular, which is addressed to "My Fellow Workmen," reads in part as follows:

"Death is no respecter of persons. Caution and watchfulness are your insurance that you will not be the next one to go. Remember, too, that if you bring about an avoidable injury to yourself or someone else at this time you have done an unpatriotic thing. Men sitting around home or in hospitals nursing an avoidable injury are doing nothing to help win the war. They are playing into the hands of the enemy, and their injury they ought to regard as a mark of shame."

The Castleton Bridge

The proposed bridge across the Hudson at Castleton, N. Y., is the subject of a decision by the Supreme Court of New York, Justice Chester, handed down on June 28, in which the proposal of the railroad company, the New York Central, is sustained. Justice Chester says that laws enacted by Congress are paramount to state laws, and he overrules the demurrer of the state which, in the suit at bar, is defending the act of the legislature forbidding the construction of a bridge except it be of one long span. The state will appeal the case to the higher court.

An injunction had been granted restraining the railroad from starting work on the structure. The road contended that federal jurisdiction was absolute, and it was upon this answer that the demurrer was argued. The secretary of war approved the railroad company's plans for the proposed bridge on May 2, 1917. These provide for two spans, 600 ft. and 405 ft. respectively.

In his decision Justice Chester says that "Congress has constitutional power to regulate commerce with foreign nations, and among the states has the paramount right to regulate such commerce over highways, railroads and bridges, as well as upon navigable waters. * * * It will be seen that both Congress and New York state have passed laws on the subject of proposed bridges. This being the situation, which is the controlling authority? It seems to me that there is but one answer and this answer should not be given by yielding to public sentiment or to the desires of influential public bodies who have spoken on the subject, but must be responsive to the controlling power of the supreme law of the land.

"I think that the acts of Congress and the determination of the secretary of war are controlling as to the kind of bridge that the Central may construct, and that state legislation prescribing differently cannot be effective to overrule the federal authorities."

Coal Production

A sharp decline in production of bituminous coal occurred during week ending June 22. The output of soft coal, including lignite and coal made into coke, is estimated at 12,016,000 net tons, a decrease compared with the week of June 15 of 610,000 net tons or 5 per cent, but an increase over the same week of 1917 of 701,000 net tons or slightly over 6 per cent.

The average production per working day during the current week is estimated at 2,003,000 net tons, as against 2,104,000 net tons during the preceding week and 1,888,000 net tons during the week of June 22, 1917.

Anthracite shipments during the week of June 22 decreased 790 cars or 1.9 per cent.

Material decreases occurred in Illinois, Ohio, Western Pennsylvania, Somerset County, high volatile district of West Virginia, Cumberland-Piedmont district, Northeastern Kentucky and in the Western and Pacific Coast states and with exception of Illinois and the western states the decline in production is entirely attributed to insufficient supply of coal cars, while in Illinois it is attributed to both car and labor shortage and in the western states, where the car situation improved slightly, to labor shortage and mine disability.

Chicago Railroad Police Mean Business

Arch crooks as well as petty pilferers are beginning to learn that the Chicago Railroad Police Commission means to accomplish the purposes for which it was organized a little over a month ago. (*Railway Age*, June 14, page 1447.) During the month of June the commission made 183 arrests in the Chicago terminals district, 105 of which were minor cases and disposed of in the municipal courts. There were 78 cases of felony which were taken to the state or federal courts, according to the nature of the offenses. Of the persons arrested 21 had served time in penitentiaries and have criminal records. Fifteen of those arrested on the charge of felony were railroad employees when apprehended. Four organized bands of thieves have been broken up. One of these bands is known to have operated on railroads for several years past, while another had goods stored away which had been shipped over a year ago. Approximately $12,000 worth of goods has been recovered by the commission, most of which was stolen from railroads during the last 90 days. All of the recovered goods were stolen prior to the first week in June. Reports from railroad men in the Chicago terminal district indicate that there has been a marked decrease in stealing during the past three weeks, i. e., since the publication of information that the Chicago Railroad Police Commission was established.

Slackers Called to Account

Numerous employees of the Pennsylvania Railroad have been guilty, apparently, of indifference, laziness or carelessness to such an extent as to call for a sharp rebuke, and, in response to a letter from the assistant general manager of the road, the chairmen of the four train-service brotherhoods, on that road, have addressed vigorous letters to their membership calling upon all individuals to serve their country faithfully in a spirit of co-operation and in keeping with the vows that have been made to back up the boys in the trenches. The assistant general manager cited a large number of specific instances of delinquencies, indifference and carelessness. The circulars issued by the brotherhood chairmen manifest a most commendable spirit of co-operation and loyalty. Extracts from some of these follow.

"The man who is failing to report on time, or is refusing to respond when called, is helping to discredit our organization, when at this critical period there is such an extreme shortage of men to move the great volume of freight necessary to keep supplies moving promptly to our armies, the

President has placed us all in the same category with the soldiers. We are just as much a part of this great war machine: our responsibility is even greater, for if we fail, or if we all should do as a few are doing (failing to respond when called) the result would be appalling."

"We should get away from the idea that our responsibility ceases when we have completed our daily assignment. The conductor is a part of the national railroad service and as an integral unit of this great republic he has a duty to perform in this time of Democracy's great struggle for the world's freedom from autocracy. By the terms of agreement between the management and our organization, we are bound to respect the working conditions and rates of pay in effect. We can assist the government to uncover not only the men engaged in engine and train service who are wilfully slacking their work, but employees in every branch of service. . . ."

"We teach a man at the time of his admittance into the Brotherhood his obligation to God, himself, his employer and his fellow member: this is the time when our obligation is being put to the test; when members of this brotherhood fail to perform service for which our Committee has stipulated rates and conditions, we have to a degree prejudiced our good faith. . . Local Chairman should carefully check the list of names and ascertain if any of these men are under the jurisdiction of his Lodge. . . Investigate each particular case."

"As members of an honorable organization, we are all in duty bound to do everything in our power to assist officials of the company in the prompt, efficient and safe movement of engines and trains. The long list of delinquencies shows a seriously demoralizing tendency. Do all in your power to see that every member is particularly careful to promptly and efficiently perform all his duties, and if for any reason they desire to leave the service of the company, they do so only after giving due and timely notice. Failure to promptly respond for duty when called and quitting the service of the company without due and timely notice are among the worst forms of industrial slacking. Industrial slacking in any of its forms is as great a menace to the safety of our country as any pro-German propaganda can possibly be."

Trial of Schweyer Automatic Train-Stop

D. H. Schweyer's automatic train-stop, briefly described in the *Railway Age* of June 21, page 1536, was exhibited in operation before a large company of railroad officers and others on the Colebrookdale branch of the Philadelphia & Reading on Sunday June 23. In this system an electric current (a. c.) controlling air brake valves on the locomotive is run through a choke coil which is so fixed on the engine frame as to move in line with a "track armature," 30 in. long, fastened on the ties 13 in. outside of the gage line. The choke coil and the track armature are 2¼ in. apart and there is nothing movable in either of them. On the passage of a train the armature weakens the current on the engine and thus causes the setting of the brakes. A roadside battery, in connection with a short section of insulated track and an insulated truck of the locomotive is arranged so as to neutralize this stop-operation, as may be desired, whenever the track ahead is clear.

The tests were made between Bechtelsville and Barto, 12 miles east of Pottstown, Pa. Tests were made under all three of the normal conditions; clear, caution and stop. The caution indication was arranged to reduce speed but not to stop the train; and the stop indication was arranged to apply the brakes in emergency.

In the caution test a service application of 15 lb. reduction was made, which resulted in a reduction of speed from approximately 35 miles an hour to about 20 miles an hour before the next ramp (track armature) was reached. This test was not considered satisfactory and it was repeated, with a service application of 25 lb. reduction. This application reduced the speed gradually from about 35 miles an hour until the train reached the next ramp, when it was brought to a stop in less than 100 ft.

The test for a full stop was made at the entrance of the signal section, and there was no preliminary caution signal, with its ramp to give the customary reduction of speed. The speed of the train over this ramp was approximately 35 miles an hour. The device applied in emergency and the train was brought to a stop in 700 ft., with the throttle open. All of the tests were repeated several times.

The behavior of the choke coil was demonstrated with the train at rest. The a. c. ammeter in the locomotive cab showed a normal current of 1.75 amperes while running or clear of the ramp. The locomotive was then stopped with the choke coil directly over the ramp. With a clearance of 2¼ in. from the ramp, the current value fell to ½ ampere, a drop of 71 per cent.

Some difficulty was experienced because of variations in the speed of the turbine generator on the engine, which caused a drop in the current on the line sufficient to permit the brakes to apply. This was due to the fact that the generator was not designed for this work, and was 50 per cent overloaded. The trouble was quickly remedied.

After the regular tests were completed, a number of runs were made to test the electro-magnetic fixture which is placed between the rails and which is designed for use on an electrified railroad in place of the insulated track section. These tests, like the others, fully met the expectations and requirements.

Accident Bulletin No. 65

The Interstate Commerce Commission has issued Accident Bulletin No. 65, containing statistics of railroad accidents in the United States during the three months ending with September 30, 1917. The total number of persons killed on the railroads of the country in that quarter was 2,841, and of injured, 50,837. The totals of the three principal classes of persons in the three principal classes of accidents are as below:

Persons Killed and Injured, Three Months Ending with September, 1917

	Passengers		Employees		Other persons	
	Kil'd	Inj'd	Kil'd	Inj'd	Kil'd	Inj'd
In train accidents	39	1,406	108	995	48	160
In train-service accidents	61	1,175	608	12,406	1,855	2,728
In non-train accidents	..	...	94	31,377	28	590
Totals	100	2,581	810	44,778	1,931	3,478

The most notable change as between this and the last preceding quarter is under the head of passengers killed in train accidents. The quarter now reported included the disastrous collision at Kellyville, Okla., September 28, in which 20 passengers were killed. The number of passengers killed in train accidents in the first quarter of 1917 (Bulletin 63) was 38. The other differences between the figures of Bulletin 65 and those of Bulletin 64 are to be explained largely by the fact, noted regularly for many years, that the quarter including April and May is one of lighter traffic than the other three quarters of the year as well as one in which, usually, the weather conditions are favorable.

Comparisons with Preceding Quarter (Ending with June, 1917)

	Bulletin 65	Bulletin 64
Total casualties	53,678	49,832
Total persons killed	2,841	2,389
Total persons injured	50,837	47,413
Passengers killed in train accidents	39	1
Employees killed	810	657
Total collisions	2,061	1,712
Collisions per million locomotive miles	4.34	3.59
Total derailments	2,586	2,554
Derailments per million locomotive miles	5.44	5.35
Damage to railroad property by train accidents	$4,144,930	$3,653,570
Shopman worked thousands of hours (class 1 roads)	350,184.0	320,954.4
Casualties to shopmen per million man hours	50.13	48.60
Casualties per million man hours to—		
Stationmen	23.19	25.07
Trackmen	19.99	22.20
Bridgemen, etc.	26.48	27.58
Other employees	17.42	17.92

The bulletin contains reports, made by the Bureau of Safety, on 34 collisions and derailments which were investigated. These accidents occurred on the following roads: Chicago, Burlington & Quincy, Chicago, Milwaukee & St. Paul; Chicago, Rock Island & Pacific; Cleveland, Cincinnati, Chicago & St. Louis (2); Denver & Rio Grande; Great Northern (3); Illinois Central; Jacksonville Terminal Company; Louisville & Nashville (3); Manistee & North Eastern; Minneapolis & St. Louis; Missouri, Kansas & Texas; New Orleans, Texas & Mexico; Nashville, Chattanooga & St. Louis; New York Central (2); Norfolk & Western; Ogden, Logan & Idaho; Pennsylvania; Pere Marquette; St. Louis-San Francisco; Shore Line Electric; Southern; Southern Pacific; Texas & Pacific; Wabash; Washington, Baltimore & Annapolis (electric).

REVENUES AND EXPENSES OF RAILWAYS

FOUR MONTHS OF CALENDAR YEAR 1918

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance of										
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.					
Buffalo, Rochester & Pittsburgh	584	$4,414,095	$405,442	$4,967,098	$639,315	$1,651,062	$61,549	$2,295,200	$124,013	$4,778,532	96.20	$188,566	$106,937	$81,544	—$500,783
Canadian Pacific Lines in Me.	233	878,333	92,005	1,036,218	150,804	227,566	13,107	752,777	10,672	1,154,926	112.46	—118,707	38,000	—156,707	—564,999
Carolina, Clinchfield & Ohio	282	1,219,484	119,218	1,360,053	158,546	264,451	52,798	407,150	54,585	936,506	68.85	423,547	59,200	364,347	—136,437
Central of Georgia	1,918	4,334,152	1,632,266	6,616,804	857,482	1,040,210	37,372	2,260,768	82,778	4,484,954	67.78	2,131,850	257,548	1,872,730	729,974
Central of New Jersey	684	8,406,972	2,058,541	11,610,765	1,018,462	2,765,526	94,880	5,891,224	275,576	10,112,910	87.08	1,497,855	649,160	836,152	—1,687,966
Central of New England	301	1,532,320	99,136	1,714,248	272,827	259,798	5,242	830,370	31,429	1,396,327	81.45	317,921	71,200	246,659	—243,016
Central Vermont	411	1,038,713	241,758	1,423,775	188,872	292,621	31,963	947,022	43,776	1,509,205	106.00	—85,430	70,700	156,280	—270,969
Charleston & Western Carolina	342	670,059	175,411	897,122	119,223	113,211	16,262	376,998	19,084	644,779	71.88	252,344	36,000	216,197	48,578
Chesapeake & Ohio Lines	2,479	14,092,255	2,936,919	18,294,934	2,295,373	4,121,097	190,808	7,132,890	387,494	14,220,449	77.73	4,074,485	580,000	3,493,878	—1,109,990
Chicago & Alton	1,050	4,436,223	1,465,415	6,364,730	862,485	1,595,535	121,055	2,892,709	143,967	5,658,191	89.89	706,539	224,778	480,924	1,002,826
Chicago & Eastern Illinois	1,131	5,393,599	1,017,773	6,977,061	875,649	2,329,084	90,695	3,067,820	194,317	6,583,268	94.35	393,793	302,129	89,141	—1,039,899
Chicago & Erie	269	2,460,620	170,359	2,896,012	717,573	535,069	60,417	1,670,183	75,217	3,066,863	105.88	—170,851	146,434	317,318	—845,914
Chicago & Northwestern	8,094	21,786,841	7,452,225	32,457,920	4,997,625	6,988,105	394,500	16,105,293	768,792	29,456,614	90.75	3,001,306	1,680,000	1,309,829	—4,008,785
Chicago, Burlington & Quincy	9,373	29,425,008	7,610,196	40,879,322	5,048,597	7,877,155	470,473	16,300,630	994,746	31,148,961	77.19	9,730,361	1,949,939	7,781,422	—3,897,595
Chicago, Detroit & Can. Gd. Trk. Jct.	60	227,816	38,185	341,019	37,269	80,462	6,132	258,841	8,906	391,609	114.84	—50,590	13,380	—64,175	—111,812
Chicago Great Western	1,496	3,805,708	1,329,563	5,590,767	741,155	1,208,956	161,817	2,467,074	152,695	4,781,052	86.51	809,715	225,211	582,751	—272,131
Chicago, Indianapolis & Louisville	657	1,921,205	615,826	2,788,740	320,478	708,293	71,301	1,226,279	83,343	2,412,304	86.50	376,436	126,730	249,337	—495,573
Chicago Junction	12	.....	.....	1,095,794	221,581	115,582	4,847	676,475	27,751	1,155,609	105.52	—60,415	8,906	69,321	—139,358
Chicago, Milwaukee & St. Paul	10,305	25,012,469	6,114,099	34,778,504	3,961,579	9,266,568	494,481	17,491,313	831,624	32,081,806	92.25	2,696,698	2,065,399	593,224	—5,178,474
Chicago, Peoria & St. Louis	247	550,650	80,491	663,721	96,058	203,813	19,769	372,698	26,960	719,297	108.37	—55,577	28,500	—84,077	—172,120
Chicago, Rock Island & Gulf	474	993,052	333,367	1,418,505	146,176	202,765	34,044	500,051	38,436	926,335	65.30	492,171	52,619	439,379	101,396
Chicago, Rock Island & Pacific	7,823	19,254,628	7,710,983	29,066,104	3,567,625	6,311,494	479,366	12,621,058	751,456	23,839,315	82.02	5,226,788	1,397,668	3,825,361	—1,116,133
Chicago, St. Paul, Minn. & Omaha	1,749	4,848,674	1,731,904	7,087,716	602,502	1,221,328	96,213	3,780,051	187,603	5,939,058	83.79	1,148,658	392,755	754,044	—511,056
Chicago, Terre Haute & Southeastern	374	1,209,702	75,509	1,209,702	135,631	455,737	16,620	536,551	36,470	1,194,359	98.73	15,343	58,000	—42,657	262,060
Cincinnati, Indianapolis & Western	321	735,107	158,080	987,554	106,699	209,772	25,688	447,261	37,015	827,355	83.78	160,199	38,677	121,522	53,578
Cincinnati, New Orleans & Tex. Pacific	337	2,652,765	1,052,911	4,062,865	328,069	1,085,685	92,201	1,685,820	87,378	3,301,231	82.26	761,634	153,825	607,504	—499,960
Cincinnati Northern	245	678,994	50,555	753,791	124,488	198,032	11,524	309,033	15,631	658,763	87.39	95,028	30,267	64,758	—42,695
Cleveland, Cincinnati, Chic. & St. Louis	2,386	12,955,073	3,574,945	18,234,906	1,825,493	3,604,163	296,260	7,922,855	370,373	14,118,859	77.43	4,116,047	709,120	3,405,473	252,171
Coal & Coke	197	311,109	80,299	410,105	76,606	131,445	5,606	202,605	14,500	430,763	105.04	—20,658	20,000	—40,658	—70,221
Colorado Midland	337	459,228	53,067	538,447	113,036	114,607	26,043	368,199	19,333	644,040	119.61	—105,593	27,456	—133,049	.....
Colorado & Southern	1,100	2,949,349	607,025	3,809,837	355,587	758,060	37,813	1,364,820	126,492	2,661,292	70.86	1,148,545	188,000	960,175	—159,908
Colorado & Wyoming	42	114,835	10,109	345,147	30,395	64,128	475	140,008	17,789	252,795	73.24	92,352	16,000	76,342	—79,375
Cripple Creek & Colorado Springs	116	260,937	41,881	310,213	24,711	38,025	3,989	104,407	13,215	184,347	59.43	125,867	25,284	—100,583	—99,262
Cumberland Valley	163	1,044,762	219,840	1,376,972	135,419	178,973	17,827	526,173	44,618	905,461	65.75	471,511	36,769	434,669	—204,170
Delaware & Hudson Co.—R. R. Dept.	878	7,960,515	756,375	9,216,505	1,010,216	2,625,219	87,039	4,823,620	340,261	8,986,331	97.50	230,173	266,560	—36,881	1,361,520
Delaware, Lackawanna & Western	955	13,806,815	2,782,919	18,663,530	1,242,236	3,494,169	253,479	8,609,823	375,378	14,123,360	76.66	4,540,170	938,642	3,600,602	1,551,729
Detroit & Mackinac	381	307,234	97,915	435,751	63,736	98,635	9,305	210,824	21,768	404,268	92.78	31,482	35,090	—3,607	—67,282
Denver & Rio Grande	2,599	7,168,275	1,366,669	9,054,592	876,915	2,162,616	126,179	3,220,839	202,919	6,699,747	73.99	2,354,845	430,000	1,922,652	—538,150
Denver & Salt Lake	255	331,927	65,266	420,273	172,262	238,502	3,624	260,619	13,738	688,746	163.88	—268,473	36,000	—304,474	—198,931
Detroit & Toledo Shore Line	80	610,274	.....	614,517	34,513	50,776	6,442	216,941	14,306	322,978	52.56	291,538	42,220	249,318	—71,040
Detroit, Grand Haven & Milwaukee	190	623,000	143,000	911,915	111,193	201,671	17,975	651,195	31,063	1,013,058	111.09	—101,143	13,776	—114,966	—140,866
Detroit, Toledo & Ironton	441	483,543	35,268	572,692	129,761	255,143	12,251	477,992	36,838	911,985	159.25	—339,293	34,000	—373,415	—430,036
Duluth & Iron Range	284	408,301	76,663	524,831	344,316	279,185	4,570	411,235	57,261	1,096,826	208.99	—571,995	31,868	—603,907	—153,144
Duluth, Missabe & Northern	410	543,132	129,426	759,105	517,345	518,896	13,078	527,247	170,735	1,753,207	230.96	—994,103	52,713	—1,046,816	—346,178
Duluth, South Shore & Atlantic	601	852,079	286,825	1,205,296	262,069	209,512	28,071	659,977	35,849	1,209,676	101.36	—4,380	72,000	—76,380	—273,817
Duluth, Winnipeg & Pacific	175	444,554	102,200	561,747	67,128	95,911	11,147	307,987	22,545	507,287	90.31	54,460	29,679	24,781	—237,808
East St. Louis Connecting Ry	3	.....	.....	312,259	40,848	42,280	1,283	249,036	15,322	348,769	111.69	—36,509	9,740	—46,252	—92,253
El Paso & Southwestern Co	1,028	3,907,789	837,085	4,970,563	422,607	650,548	75,048	1,364,625	126,697	2,667,557	54.35	2,303,006	20,394	2,098,949	—222,941
Elgin, Joliet & Eastern	804	4,178,530	42	4,887,791	696,697	1,185,378	26,846	2,084,606	111,742	4,104,332	83.97	783,458	203,091	580,367	—338,503
Erie	1,989	16,806,187	2,862,569	22,092,892	2,960,082	7,019,858	320,169	12,505,919	597,372	23,563,542	106.66	—1,470,650	908,041	—2,381,213	—3,312,721
Florida East Coast	764	1,922,304	1,190,605	3,590,712	301,896	372,050	57,606	1,082,988	68,756	1,834,422	51.09	1,756,290	165,790	1,589,570	—80,885
Fonda, Johnstown & Gloversville R. R. Co.	88	94,374	223,220	334,569	34,684	29,259	2,002	111,805	25,173	202,923	60.65	131,646	18,000	113,646	—10,836
Ft. Smith & Western R. R. Co.	253	291,180	90,949	415,913	65,651	108,516	10,842	156,254	22,143	365,889	87.97	50,024	19,500	30,521	13,099
Ft. Worth & Rio Grande Ry. Co.	225	220,972	117,102	366,850	68,699	76,561	8,123	156,154	18,841	328,377	89.51	38,472	12,083	26,025	38,533
Ft. Worth & Denver City	454	1,729,455	591,370	2,442,910	181,998	491,867	24,423	985,228	76,404	1,776,712	73.48	672,199	85,430	586,759	—41,036
Galveston, Harrisburgh & San Antonio	1,360	4,888,031	1,506,732	6,814,071	810,359	902,675	125,331	2,545,367	182,312	4,576,531	67.17	2,237,540	226,000	2,010,408	—43,670
Galveston Wharf	13	.....	.....	341,012	4,644	4,181	1,592	101,949	2,667	203,672	59.72	137,340	49,200	88,139	—87,624
Georgia	328	1,215,731	448,453	1,798,697	142,232	226,918	40,068	775,978	42,637	1,228,587	69.31	570,110	26,469	543,550	260,623
Georgia, Southern & Florida	462	664,911	343,220	1,114,504	144,385	223,263	25,253	452,783	38,469	890,713	79.92	223,791	53,978	169,320	18,186
Grand Rapids & Indiana	569	1,358,961	438,682	1,961,344	300,662	441,891	37,078	941,160	72,511	1,794,695	91.50	166,649	91,887	73,980	—126,733
Grand Trunk Western	347	2,082,000	500,000	2,804,606	390,229	916,330	69,665	1,534,249	91,592	3,019,133	107.64	—214,527	150,596	—367,953	—697,500
Great Northern	8,255	17,411,771	4,288,218	24,168,936	4,708,269	4,881,837	344,332	12,205,372	527,036	22,907,109	95.77	1,261,827	1,794,260	—535,263	—4,509,173
Gulf & Ship Island	307	542,265	169,531	784,097	137,313	126,934	14,280	250,040	39,674	567,902	73.43	216,195	42,370	173,553	798
Gulf Coast Lines	920	1,810,005	665,910	2,616,270	357,365	335,977	61,721	765,825	95,030	1,615,850	61.76	1 000,419	85,830	914,589	148,263
Gulf, Colorado & Santa Fe	1,937	4,250,760	1,539,178	6,156,218	1,095,802	877,444	104,501	2,010,281	207,642	4,283,074	69.57	1,873,144	278,832	1,592,691	583,671
Gulf, Mobile & Northern	402	576,129	119,233	731,498	91,053	139,979	19,912	266,356	36,171	553,742	75.66	177,755	45,059	132,687	—30,612
Hocking Valley	349	2,597,117	268,208	3,003,674	397,939	1,040,984	29,344	1,313,756	78,820	2,858,796	95.18	144,878	199,400	54,587	—636,278
Houston, East & West Texas	190	488,055	138,959	666,200	97,292	64,350	7,986	282,860	13,156	465,569	69.88	200,631	25,625	174,790	—30,772
Houston & Texas Central	948	2,034,907	586,521	2,823,007	408,486	334,865	56,694	1,121,219	76,513	2,001,994	70.92	821,014	142,790	677,232	52,960
Illinois Central	4,781	22,972,964	5,663,079	30,911,071	4,674,875	6,412,822	328,181	12,246,505	757,577	24,564,892	79.46	6,346,179	1,630,108	4,708,437	—1,569,463

Traffic News

The postage on letters by airplane (between New York and Washington) has been reduced from 24 cents an ounce to 16 cents for the first ounce and six cents for each additional ounce. The price includes six cents an ounce for transportation and ten cents for special delivery.

The Railroad Administration has announced that 5 cents will be the minimum passenger fare instead of 10 cents, as provided in general order No. 28. This puts back to 5 cents the fares between several stations, all within the limits of Jersey City, on the Central Railroad of New Jersey, which had been the subject of loud protests.

The New York State barge canal is to have a package freight service, under the charge of F. B. McPherson, general freight agent, Utica. This is announced by G. A. Tomlinson, general manager of the New York canal section of the Federal Railroad Administration, who says that six steamboats have been assigned to this service.

The Car Service Section has asked all roads to send box cars of the Illinois Traction Company to that road. If loaded to junction points, they will not be subject to reconsignment away from the home road. This action is said to be necessary to provide equipment needed by the Illinois Traction, its own cars being specially constructed to meet its requirements, while the ordinary railroad box car cannot be used with safety.

At the request of the Food Administration, the Railroad Administration has withdrawn the minimum charge of 50 cents for shipments of milk and cream, as provided in the general rate advance order effective on June 25. This will leave in effect the existing minimums on such shipments. The Food Administration had received many protests from dairymen that the fifty-cent minimum, which would have had to be paid on shipments, even so small as a single can, would work a hardship.

The Food Administration announces that the establishment of new freight rates by the Railroad Administration has necessitated a change in the government price basis for wheat, and the new increased prices were made effective on July 1. The change takes into consideration not only the increase in transportation rates, but other factors. An executive order was issued by President Wilson on June 21 to enable the Food Administration to make the necessary readjustments in wheat prices to cover the increase in rates, the intention being, so far as the complex problem of railway rates will permit, to readjust prices at the terminals on such a footing as to place the farmer in the same position, as near as may be, that he enjoyed previously.

Coal Supply Arranged for the Northwest

The Fuel Administration and the Railroad Administration have arranged for shipments of necessary coal by the Great Lakes for the northwestern states and that portion of Canada dependent upon the lake route. A total of 28,000,000 tons of bituminous coal will be moved through Lake Erie ports to the Northwest; 24,000,000 tons to the northwestern states and the remainder to Canada. The aim will be to complete the movement of the coal by the end of October.

Pipe Association Protests Rate Increase

The American Concrete Pipe Association has filed a protest with the United States Railroad Administration contending that the general freight increase will work great hardship on numbers of that body—in some cases to the extent of bankrupting them. The protest reads in part as follows:

"Members of the association have taken contracts for concrete tile to be delivered on the work or contracts for the entire construction of drainage districts. According to our understanding of the ruling in such cases, the freight will have to be paid by the shipper. The situation is made more acute on account of the great increase on short haul freight, although the government has for some time been encouraging the establishment of local plants such as the concrete tile manufacturers have built; so this ruling puts a greater hardship on them than if they had been shipping longer distances. What this ruling will mean is that one concern will be able to compete in the other man's territory in many cases more easily than in his own."

Commercial Travelers Want Reduced Rate

Representatives of various organizations of commercial travellers, who asked that the Railroad Administration give them a passenger mileage rate of 2⅜ cents, were given a hearing at Washington on June 28 by Luther M. Walter, assistant to the Director of Public Service and Accounting, and Gerrit Fort, assistant in charge of passenger matters to the Director of Traffic. Among the organizations represented were the Association of Commercial Travellers, the National Council of the Travelling Salesmen's Association, the National Shoe Travellers' Association, the United Commercial Travellers' Association, the Far Western Travellers' Association, the Southern Travellers' Association, the Garment Salesmen's Association, the Lace and Embroidery Salesmen's Association, and the Merchants' Association of New York.

Under General Order No. 28, the old mileage book rates were abolished, and commercial travellers now have to pay three cents a mile.

Consolidated Ticket Office Facilities Increased

The Railroad Administration, to remedy congestion, has extended the facilities of the consolidated ticket offices in Washington, New York and other large cities. According to a statement issued by the administration, the congestion results in part from an abnormally heavy passenger travel and, in part from the recent advance in fares, which came at a time when the ticket offices were carrying their peak load for the season. Another factor which has increased the burden of these offices is the recent authorization of a rate of a cent a mile for soldiers and sailors on furlough. Many men in the service are taking advantage of the low fare, and the work of issuing these tickets involves delay.

On July 1 an annex to the Washington consolidated ticket office was opened in the room formerly occupied by the Wells-Fargo Express Company, in the same building as the ticket office. In this office, government orders and military, Navy and other business, the transaction of which requires extended time, will be cared for. Other short cuts were adopted in the sale of tickets, both in the consolidated office in the Washington Terminal, and the forces in both offices were augmented.

Proposed Consolidated Classification Completed

The committee appointed by the director general early in the year to formulate uniform rules, descriptions and weights for the three freight classifications, has completed its work and its report, a volume of 485 pages is now in the hands of the Interstate Commerce Commission. Hearings on the changes proposed in this report will be held on August 1 at Boston, on August 5 at New York, August 12 at Chicago, August 19 at Omaha, August 26 at Portland, Ore., August 30 at San Francisco, September 5 at Denver, September 9 at Ft. Worth, September 13 at New Orleans, and September 19 at Atlanta. The hearings will be held under the direction of Examiner Disque and J. C. Colquitt, classification agent of the Interstate Commerce Commission. The proposed Consolidated Freight Classification No. 1 will cancel Official Classification No. 44, Southern Classification No. 43 and Western Classification No. 55, and supplements to those classifications. The committee which prepared the new classification consisted of R. N. Collyer, chairman of the Official Classification Committee; R. C. Fyfe, chairman of the Western Classification Committee; J. E. Crosland, chairman of the Southern classification; J. E. Williams, chairman of the Uniform Classification Committee, and J. E. Colquitt, classification agent of the Interstate Commerce Commission.

Commission and Court News

Interstate Commerce Commission

A large number of electric interurban lines have filed applications with the Commission for permission to increase their fares to three cents a mile. Attorneys for the Washington, Baltimore & Annapolis, at a hearing before the commission, stated that the company did not need more money, but proposed the increase at the request of the Railroad Administration.

State Commissions

The Railroad Commission of Tennessee has issued a statement relative to the new freight rates as they affect railroads in that state. The commission agrees to the intrastate rates prescribed by the Railroad Administration only as a war measure, and only agrees that they shall be effective during the period of federal control. The rates shall be subject to such right of review as now or hereafter may exist. Tennessee shippers who may have cause of complaint may file their complaints with the commission, which will inquire into the justice of such complaints; and the commission will, when necessary, go before the Interstate Commerce Commission or the Federal Administration and endeavor to secure just and satisfactory settlements in all cases. "It is the policy of the commission to co-operate with Federal Administration of Railroads, reserving all questions as to the respective powers and jurisdiction of the State and Federal Commissions for future determination."

Personnel of Commissions

A. G. Pack, assistant chief engineer, Bureau of Locomotive Boiler Inspection, Interstate Commerce Commission, has been nominated by President Wilson chief inspector, succeeding Frank McManamy, who was recently appointed mechanical assistant to the director of the Division of Operation of the Railroad Administration. Mr. Pack was born July 22, 1865, at Princeton, W. Va. In 1882 he entered the service of the Chesapeake & Ohio as an apprentice in the boiler shop. In 1887 he went to Denver and worked for the Union Pacific and the Denver & Rio Grande as a locomotive fireman. He was a locomotive engineman on the Colorado & Midland and the Colorado Springs & Cripple Creek, serving in the latter position until his appointment in 1911 as district inspector of locomotive boilers of the Interstate Commerce Commission at Denver. He was appointed assistant chief inspector in February, 1914.

Court News

Attempted Regulation of Shipments of Liquor

A city ordinance required all bills of lading to be open to inspection of the city commissioners and police officers and required every common carrier to keep at its office in the city an alphabetical record of all consignments of alcoholic liquors received by it in the city, the names of shipper and consignee, and the quantity of the shipment. This record was also to be open to inspection by commissioners and police. The New Jersey Court of Errors and Appeals holds that these provisions of the ordinance, so far as they attempt to affect as a common carrier a railroad engaged in interstate and intrastate business, are in conflict with the act of Congress regulating interstate commerce, and must be set aside. A clause in the city charter making it unlawful to sell within the corporate limits spirituous liquors in quantities less than five gallons without a license did not authorize an ordinance making it unlawful for any common carrier to deliver in the city any alcoholic liquor consigned to a club, lodge, or other association. If the ordinance was invalid, as to interstate shipments, it was also invalid as to intrastate shipments, as the two could not be separated in view of the object of the ordinance. As the shipments sought to be forbidden were not in violation of any state law they were not prohibited by the Webb-Kenyon Act. West Jersey & Seashore v. Millville (N. J.), 103 Atl., 245. Decided March 4, 1918.

New Initial Carrier Constituted by Tariff Regulation

In every case of an action for damages for breach of contract or breach of duty by a common carrier of freight to carry it safely, whether in assumpsit on the contract or in tort for breach of duty, the right of action is dependent on the existence of a contract of carriage between the plaintiff and the carrier when the alleged cause of action arose. This contract need not have been express, but may have arisen from the duty imposed at common law or by statute, state or federal, in which case the contract will be implied in law from the duty. The Virginia Supreme Court of Appeals holds that, under the Interstate Commerce Act, as amended, if an interstate shipment of freight is begun under an express contract of carriage between the initial carrier and the shipper, and subsequently a connecting carrier issues another contract to the shipper and takes up the original bill of lading, the second contract does not supersede the first, which remains in force by virtue of the federal statute law, and the shipper and all assignees claiming through him, all of whom could have enforced the original contract, have no right of action for damages against the subsequent carrier, but only against the initial carrier. This is now the settled construction of the federal statute law. The same result would follow if the initial contract were not an express contract, but one implied in law. But if the initial contract was invalid as a contract of carriage east of Chicago, then a second contract might be made by a connecting carrier carrying east of Chicago subjecting it to the liability, under the act, as amended, of an initial carrier. Where a tariff regulation prohibits the movement of live stock on a shipper's order contract east of Chicago, the regulation applying to all carriage of live stock on the lines of all roads east of Chicago, the first carrier east of Chicago who makes such second contract is the initial carrier within the act.—Chesapeake & Ohio v. Nat. Bank of Commerce (Va.), 95 S. E., 454. Decided March 21, 1918.

United States Supreme Court

Choice of Routes by Railroads

The Supreme Court of the United States has reversed three judgments of the Minnesota courts allowing the plaintiffs to recover from the Northern Pacific an amount equal to that by which the freight collected for coal carried on an interstate route from Duluth to some other city in the State exceeded the rate prescribed by the Minnesota law for carriage between those points on another route, wholly within the State.

The decision says that in the absence of shipping instructions it is ordinarily the duty of the carrier to ship by the cheaper route. But the duty is not an absolute one, existing only if other conditions are reasonably equal. Resort to the more expensive route may be justified by the particular circumstances of the case or by general practice. In these cases the justification was rested on a general practice. Because of the grades of the two lines, all outbound shipments were and are in general moved over the southerly route on account of the very great expense which another arrangement would entail. Whether the practice was reasonable was an administrative question and, therefore, the court had no jurisdiction to adjudicate the controversy until it had been determined by the Interstate Commerce Commission. Before the judgments were entered by the Supreme Court of Minnesota in these cases, that Commission had determined that under the circumstances, "the carrier was not required by law to change its methods of operation and abandon the use of its more favorable interstate line"; and had refused to grant refunds in respect of the shipment of other commodities, under precisely similar circumstances. The fact that the question involved an intrastate as well as an interstate route did not prevent the application of the rule that it must first be determined by the Commission. It is sufficient that one of the routes is interstate.—Northern Pacific v. Solum. Decided June 10, 1918.

Equipment and Supplies

U. S. Standard Locomotives

The Railroad Administration on Tuesday gave out a statement that Director General McAdoo had been notified by the Baldwin Locomotive Works that the first of the locomotives recently ordered had been completed and is ready for inspection.

It is understood that the recent order for 390 additional locomotives will be treated as an extension of the original order of 1,425 and that the same specialties will be used for the same classes of locomotives.

Orders for headlight cases for the United States standard locomotives have been placed as follows:

765 Shroeder Headlight & Generator Co.
500 Handlon & Buch.
500 Adams & Westlake.

Water gage cocks for the 1,025 United States standard locomotives have been ordered from the Nathan Manufacturing Company. Superheaters for the locomotives will be built by the locomotive builders on a royalty basis.

In last week's issue a typographical error gave orders for journal boxes for 32,500 of the standard cars to the Union Spring & Manufacturing Company. This should have been given as 2,500 cars only.

Locomotives

THE PENNSYLVANIA EQUIPMENT COMPANY, 1420 Chestnut street, Philadelphia, is in the market for a 70 to 80-ton six-wheel switching locomotive, and for 2 second-hand 80 to 90-ton standard gage Shay locomotives.

Freight Cars

THE IMPERIAL REFINING COMPANY, Ardmore, Okla., is inquiring for tank cars.

THE PENNSYLVANIA EQUIPMENT COMPANY, 1420 Chestnut street, Philadelphia, is in the market for 6 to 12 second-hand Goodwin dump cars, all steel construction, similar to class "G" and equipped for air dump.

Signaling

THE WABASH has ordered from the Union Switch & Signal Company an interlocking plant for the crossing of its line with the Pere Marquette at Magee, Ind., and another for its crossing with the Chicago & Alton at Clark, Mo. These plants will have 20-lever and 32-lever machines, respectively, and will be installed by railroad forces.

THE LOUISVILLE & NASHVILLE has contracted with the Federal Signal Company for the installation of an electric interlocking plant at Winchester, Ky., 56 working levers. The track circuits will be alternating current and there will be complete approach and sectional route locking. The machine will have lever lights and a spot-light track model.

THE CHICAGO, MILWAUKEE & ST. PAUL recently contracted with the Union Switch & Signal Company for the necessary material to complete the automatic block signaling on the western section of the line now being electrified, a distance of 220 miles. The new signaling involves approximately 325 Style "L" light signals, 325 impedance bond layouts, 500 Model "15" track and line relays, 500 S V L vane line relays with switch indicators, transformers, lighting arresters, track impedances, relay housings, etc. The d. c. automatic (semaphore) signals now in service on a large part of the 220 miles of this new electrification will be replaced by the three position color light signals operated by alternating current. The railroad company's field forces will do the construction work.

Supply Trade News

Marvin Hughitt, Jr., until recently vice-president of the Chicago & North Western, has been made president of the Superior & Consolidated Coal Companies, with office at Chicago.

E. C. Carroll, superintendent of construction of the Chicago & North Western, in the signal department, has resigned to become sole representative of the National Carbon Company, with headquarters at Chicago, effective July 8.

At a directors' meeting of the Chicago Pneumatic Tool Company, held June 28, W. P. Pressinger, general manager of sales, with headquarters at Chicago, and W. H. Callan, manager of plants, with the same headquarters, were elected vice-presidents. Mr. Pressinger's photograph and biography were published in the *Railway Age*, on May 31.

Edward F. Carry, president of the Haskell & Barker Car Company, has resigned as director of operations of the Shipping Board, to become chairman of the Port and Harbor Commission. He will be succeeded on the Shipping Board by **J. H. Rosseter,** of San Francisco, vice-president and general manager of the Pacific Mail Steamship Company.

John F. Kane, assistant secretary of the Pullman Company, was elected secretary at a meeting of the board of directors of that company held on June 10, to succeed **A. S. Weinsheimer,** deceased. Mr. Kane is a native of Ingersoll, Ont. He received his early education in the schools of that city, following which he came to Chicago. On September 1, 1891, he entered the service of the Pullman Palace Car Company, now the Pullman Company, as a telegraph operator. In 1904, he was appointed paymaster with headquarters at Chicago, in which position he remained until 1913, at which time he was elected assistant secretary. He continued in that position until his recent election as secretary with headquarters at Chicago, as mentioned above.

J. F. Kane

Ellsworth L. Mills has resigned as president and secretary of Anti-Creeper Corporation, and **Howard A. Butler** has been elected as president and secretary in his place. **Herbert W. Lockwood** has also resigned as treasurer and **James G. Shaw** has been elected treasurer in his place. **Ellsworth L. Mills** has also resigned as treasurer of the Creepcheck Company.

The Barco Mfg. Company, Chicago, has placed on the market a type of crosshead and shoe invented by Charles D. Markel, chief construction inspector of locomotives in the inspection and test section of the United States Railroad Administration. This device, which is known as the Barco crosshead and crosshead shoe, was described in the *Railway Age Gazette*, issue of February 2, 1917, page 196. The company is prepared to furnish crossheads complete or to sell the shop rights to manufacture the device at the option of the railroads.

A. B. Cole has been appointed assistant to manager, department of publicity, Westinghouse Electric & Mfg. Company, East Pittsburgh, Pa., to succeed **M. C. Turpin,** who has accepted a position in the ordnance department at Washing-

ton, D. C. Mr. Cole will have charge of the editorial work, including the preparation of literature, and supplying information to the press. Mr. Cole started his career as general car-shop laborer for the Grand Rapids, Grand Haven & Muskegon Railway, Fruitport, Mich., with the idea of obtaining a first-hand working knowledge of electric railway operation. In June, 1909, he graduated from the School of Electrical Engineering, Purdue University, Lafayette, Ind., where he made a specialty of steam and electric railway studies. On July 15, 1909, he entered the engineering apprenticeship course of the Westinghouse Electric & Mfg. Company and completed this work in February 6, 1911. While on the course he was engaged, in addition to the regular shop testing, on railway project work in the general engineering division and as a railway sales correspondent at East Pittsburgh, and afterward in the Cincinnati district office. In November, 1912, Mr. Cole was transferred to the department of publicity to prepare railway publications and a year later was placed in charge of railway and large power apparatus publicity. Later he was given charge of railway, power, marine and R. D. Nuttall Company publicity, which position he held up until the time of his appointment as assistant to manager. Recently, Mr. Cole has been co-operating on publicity matters, with the American Electric Railway Association War Board at Washington, D. C., spending one-half of his time in Washington and the remainder in East Pittsburgh.

Trade Publications

BRAKE BEAMS.—The American Steel Foundries, 30 Church street, New York, has recently issued a 34-page catalogue describing the Ajax and Hercules brake beams, the Simplex clasp brake, and the Atlas safety guards.

WOOD MILLER.—In a well illustrated, four-page folder, the Oliver Machinery Company, Grand Rapids, Mich., describes its No. 75 wood milling machine. Its application to all kinds of pattern work including gear patterns is plainly shown in the folder.

SUPERHEATER DAMPERS.—The Locomotive Superheater Company, 30 Church street, New York, has recently issued Bulletin No. 3 on superheater dampers. The proper methods of installing, operating and maintaining the dampers are plainly illustrated and described.

FIBROUS PACKING.—Under the title of Jones Packings, the Jones Packing Company, 50 Church street, New York City, has issued a catalogue describing the several kinds of fibrous packing manufactured by that company. They include packing for superheater and high pressure steam engines, also water pump and valve stem packing.

PORTABLE ELEVATOR.—The New York Revolving Portable Elevator Company, Jersey City, N. J., has recently issued Bulletin No. 50, entitled The Revolvator, describing the company's portable elevator or tiering machine which is used in storerooms and warehouses for the piling or stacking of goods. The bulletin is well illustrated and shows in considerable detail how the Revolvator can be used for many different kinds of work.

VALVES AND FITTINGS.—A new catalogue of hydraulic valves and fittings has just been issued by the Hydraulic Press Manufacturing Company, Mt. Gilead, Ohio. The book is well written and illustrated, and presents in an attractive way the complete H-P-M line. Four general classes of hydraulic valves are shown; also different types of hydraulic fittings, such as accumulator controls, pressure gages, hydraulic valves, etc. Many of these devices are of improved design and are described for the first time in this catalogue.

PORTABLE FORGES.—The Buffalo Forge Company, Buffalo, N. Y., has issued a catalogue entitled Buffalo Forges, describing the complete line of portable machines manufactured by that company. In order to simplify the catalogue and make changes and additions easy, it has been punched, and the new sections may be attached by suitable brass fasteners. Section No. 108 has been recently issued, to be added in this way. It covers the line of stationary forges manufactured by the company.

Railway Construction

BALTIMORE & OHIO.—A contract has been given to the Empire Engineering Company, Inc., Baltimore, Md., and work is now under way putting in additional yard tracks at Claremont and Mt. Winans, Md., both in the westerly section of Baltimore. The work will be heavy and includes rearrangement of existing tracks and the extension of the bridge carrying Curtis Bay branch over the main line. The work calls for the construction of two 85-ft. steel spans.

This company has awarded a contract for the construction of a new locomotive shop at Cumberland, Md., to Westinghouse, Church, Kerr & Co., New York. The estimated expenditure is $1,200,000.

CHICAGO & ALTON.—This company is preparing plans for a brick freight house, 520 ft. by 36 ft. to be built at Kansas City, Mo. The building will have a slate roof supported by timber trusses and for a distance of 300 ft. will have a second story, which will be occupied by the general agent and the division superintendent's forces.

The Alton is also asking for bids on the reinforcing of a bridge 5 miles north of Godfrey, Ill., on the line from Godfrey to Roodhouse. The work will involve jacketing five 40-ft. stone arches with concrete. The railroad is also preparing to rebuild its bridge over the Wood river two miles south of Alton, Ill. This work is necessitated by the widening and deepening of the channel of the river. The bridge will be lengthened and the substructure will be rebuilt. The Alton will use spans which it has in stock for the superstructure.

CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS.—This company is preparing to build second track on its Cleveland-Indianapolis division from Farmland, Ind., to Ansonia, Ohio, 26 miles, and from Bellefontaine, Ohio, to Marion, 39 miles. The Big Four will also undertake the improvements of yards in the vicinity of Cincinnati, Ohio, which will cost approximately $500,000. At Galion, Ohio, the company expects to construct an engine terminal consisting of a 15-stall roundhouse and a 90-ft. turntable and appurtenances. Some small additions will also be made to the Beech Grove and Brightwood yards at Indianapolis, Ind.

ELECTRIC POINT MINING COMPANY.—This company has completed preliminary surveys for a railroad between Leadpoint, Wash., and Boundary, 11 miles. The construction of this line will involve the erection of two bridges totaling 120 ft. in length. The principal commodity which will be carried by the line will be ore. R. A. Young, president, Northport, Wash.

ILLINOIS CENTRAL.—This company has awarded a contract to the Walsh Construction Company, Davenport, Iowa, for grading work in its Markham yard, Chicago. The new yard will be east of the right of way and south of One Hundred and Seventy-first street, Chicago. Between 6,000,000 and 7,000,000 cu. yds. of material will have to be handled before the yard is finally completed. This year, however, only 1,500,000 cu. yds. will be handled. The Walsh Construction Company has been allowed a certain profit per cubic yard above the cost of labor and allowance for the use of its equipment. All other costs will be borne by the road. The track work will be done by the Illinois Central's own forces.

The Illinois Central has awarded contracts to T. S. Leake & Co., Chicago, for the construction of mechanical facilities at Champaign, Ill.; to the Leyden-Ortseifen Company, Chicago, for mechanical facilities at Carbondale, Ill.; to George B. Swift & Co., Chicago, for mechanical facilities at Mounds, Ill; to Joseph E. Nelson & Sons, Chicago, for mechanical facilities at Fulton, Ky., and to W. J. Zitterell & Co., Webster City, Iowa, for mechanical facilities at Amboy, Ill. (May 17, page 1203; June 14, page 1450.)

BRITAIN BUILDS CONCRETE SHIPS.—Twelve concrete shipbuilding yards were organized in Great Britain recently, with capital stock varying from $25,000 to $350,000, respectively.—*Emergency Fleet News.*

Railway Financial News

BRAZIL RAILWAY.—W. Cameron Forbes, receiver of this company, has presented the outline of a plan of reorganization of the company so far as it relates to the company's outstanding fifty-year five per cent gold debentures. Holders of the issue received notice of a meeting to be held in London, August 16, 1918, at which a composition agreement will be offered them by which their present holdings would be refunded at par into a new issue of debentures, part of a total issue of $5,000,000, which is to be secured by trust deeds containing a specific charge on the company's assets, placing them in order of preference immediately after the charges given for securing prior lien bonds. This will place the new issue after the French series international bonds, the six per cent notes and the convertible debentures. All existing unpaid coupons on the old debentures must be surrendered with no claim to payment.

BUFFALO & SUSQUEHANNA.—The directors at their meeting on June 27 took no action on the common dividend. An official statement was issued as follows: Because the dividends on the common stock have not been at the same rate for three years, the statute requires the permission of the government to continue them at the present regular rate of 7 per cent per annum. Application for this permission has been made, showing that the corporation has ample cash on hand apart from what it may receive as rental from the government, and that its earnings have been and are sufficient to justify a 7 per cent dividend, but the application has not yet been acted upon, and pending that action, the declaration of the usual quarterly dividend is delayed.

CANADIAN NORTHERN.—William A. Read & Co. have purchased $5,000,000 of Canadian Northern Railway equipment trust 6 per cent certificates, Series A. The certificates mature in different amounts annually from July 1, 1919, to July 1, 1928, inclusive.

See article in last week's issue, page 1562, on the Canadian Northern stock value.

CINCINNATI, NEW ORLEANS & TEXAS PACIFIC.—This company has declared an extra dividend of 3½ per cent on the common stock in addition to the regular common of 3 per cent and the regular preferred of 1¼ per cent.

DENVER & SALT LAKE.—A protective committee has been formed in the interest of the holders of the Denver & Salt Lake Railroad 5 per cent equipment notes dated March 1, 1913, and the 6 per cent equipment certificates dated July 1, 1915. The members of the committee are: Chairman, John H. Mason, president of the Commercial Trust Co. of Philadelphia; Pierpont V. Davis, of the National City Company of New York; Sewall S. Watts, Baker, Watts & Co. of Baltimore; Arthur Dorrance and Reynolds D. Brown, Philadelphia. The Commercial Trust Company of Philadelphia has been designated as depositary, and the Empire Trust Company of New York, agent for the depositary. Noteholders are requested to deposit their holdings before July 15.

ILLINOIS CENTRAL.—David R. Burbank, of New York, has been elected a director.

INTERBOROUGH RAPID TRANSIT.—Application was filed with the New York Public Service Commission on Saturday for approval of a proposed collateral trust agreement securing $37,700,000 in three-year 7 per cent notes and for authority to issue and dispose immediately of $33,000,000 thereunder. Several days ago the company filed an application for permission to issue about $58,906,000 bonds to be used as collateral for the contemplated note issue. The commission set July 10 as the date for the hearing on the bond issue, and at the same time will consider the merits of the note issue proposal, as the two are linked. The money is sought to complete the new rapid transit lines.

WABASH.—The directors have declared the regular dividend of 1 per cent on the preferred "A" stock, subject to the approval of the Director General.

Railway Officers

Executive, Financial, Legal and Accounting

M. Manly, treasurer of the Norfolk Southern, with office at Norfolk, Va., has been appointed local treasurer.

F. W. Russell, assistant secretary and assistant treasurer of the Virginian Railway, with office at Norfolk, Va., has been appointed local treasurer.

Claude Waller, general counsel of the Nashville, Chattanooga & St. Louis, with headquarters at Nashville, Tenn., has been appointed general solicitor of that road.

E. Marvin Underwood, general counsel of the Seaboard Air Line, has been appointed general solicitor. **R. L. Nutt,** treasurer and assistant secretary, has been appointed local treasurer; both with offices at Norfolk, Va.

D. W. Bigoney, treasurer of the Erie, has been appointed local treasurer; **C. P. Crawford,** controller, has been appointed general auditor, and **F. A. Clark,** general auditor, has been appointed assistant general auditor; all with headquarters at New York.

W. H. Davies, controller of the Delaware & Hudson, has been elected treasurer of the same road and the Quebec, Montreal & Southern, and the Napierville Junction, with office at New York, vice **C. A. Walker,** retired, and **W. E. Eppler,** auditor expenditures, has been appointed controller, to succeed Mr. Davies.

Edward Buckland, who has been elected president of the New York, New Haven & Hartford, with headquarters at New Haven, Conn., as has already been announced in these columns, was born on December 31, 1866, at Buffalo, N. Y. He graduated from Washburn College, Topeka, Kan., in 1887, and two years later graduated from Yale University. In 1898 he was appointed attorney of the New York, New Haven & Hartford for Rhode Island, and subsequently served as attorney for Rhode Island, Connecticut and New York. In January, 1907, he was chosen vice-president and later also general counsel of the same road, and subsequently also vice-president of the Central New England; the New England Navigation Company; Connecticut Company, and the Rhode Island Company.

E. G. Buckland

Operating

E. L. Brown, president of the Denver & Rio Grande, has been appointed federal general manager.

W. G. Bierd, president of the Chicago & Alton, has been appointed federal manager of the same road.

J. E. Taussig, vice-president of the Wabash, has been appointed federal general manager of the Wabash, west of St. Louis.

G. F. Hawks, vice-president and general manager of the El Paso & Southwestern, has been appointed federal general manager.

J. M. Herbert, interregional director at St. Louis, has resigned to resume duties as president of the St. Louis-Southwestern.

F. E. Clarity, assistant general manager of the Denver & Rio Grande, with office at Salt Lake City, Utah, has been appointed transportation assistant, with office at Chicago.

F. N. Beal, general manager of the Sandy River & Rangeley Lakes, has been appointed superintendent, with office at Phillips, Maine.

E. A. Crosby, general manager of the Bridgton & Saco River, has been appointed superintendent, with office at Bridgton, Maine.

J. P. Beckwith, vice-president of the Florida East Coast, has been appointed general manager of that road, with office at St. Augustine, Fla.

H. W. Stanley, receiver of the Tennessee Central with office at Nashville, Tenn., has been appointed general superintendent of the same road.

Lyman Delano, vice-president of the Atlantic Coast Line, has been appointed federal manager of that road and the Winston-Salem Southbound, with office at Wilmington, N. C.

W. J. Jackson, president of the Chicago & Eastern Illinois, has been appointed federal manager of that road, the Evansville & Terre Haute, and the Chicago, Terre Haute & Southeastern.

E. E. Calvin, president of the Union Pacific, the Oregon Short Line, and the St. Joseph & Grand Island, has been appointed federal manager of those roads and of the Los Angeles & Salt Lake.

C. M. Kittle, whose appointment as federal manager of the Illinois Central Lines in southern territory has already been announced, has been appointed to the same position in central western territory.

W. H. Farrell, superintendent of terminals of the Grand Trunk, with office at Toronto, Ont., has been appointed general manager of the Algoma Eastern, with headquarters at Sudbury, Ont., vice **A. L. Smith,** resigned.

W. G. Vollmer, assistant to the president of the Missouri Pacific, with headquarters at St. Louis, Mo., has been appointed assistant regional director of southwestern railroads, with the same headquarters, effective July 1.

A. Robertson, vice-president of the Missouri Pacific, has been appointed federal manager of that road and the St. Louis Southwestern lines, north of Texas, and the Louisiana & Arkansas, with headquarters at St. Louis, Mo.

W. R. Scott, vice-president and general manager of the Southern Pacific, has been appointed federal manager of the Southern Pacific, lines west of El Paso and Ogden and south of Ashland, Ore., and also of the Western Pacific.

H. A. Scandrett, assistant director of traffic and commerce counsel of the Union Pacific, with office at Chicago, has been appointed traffic assistant to the regional director of the central western roads, with headquarters at Chicago.

William Sproule, president Southern Pacific, has been appointed district director, with office at San Francisco, of all lines west of Ogden and Salt Lake City, Utah; Albuquerque, New Mexico; El Paso, Texas, and south of Ashland, Oregon.

Le Roy Kramer, vice-president of the Pullman Company, whose appointment as federal manager of the St. Louis-San Francisco was noted last week, has also been appointed the federal manager of the Missouri, Kansas & Texas, lines north of Texas.

W. L. Seddon, vice-president in charge of operation of the Seaboard Air Line, has been appointed general manager, with office at Norfolk, Va. **W. L. Stanley,** assistant to president, has been appointed assistant to federal manager, with office at Atlanta, Ga.

J. E. Gorman, whose appointment as federal manager of the Rock Island in southwestern territory has already been announced, has been appointed to the same position in charge of Rock Island Lines, north of Herrington, Kan., and west of Tucumcari, N. M.

J. A. Edson, president of the Kansas City Southern, has been appointed federal manager of that road, and the Texarkana & Ft. Smith, the Houston East & West Texas, the Midland Valley and the Vicksburg, Shreveport & Pacific, with headquarters at Kansas City, Mo.

W. P. Bruce, superintendent of terminals of the Nashville, Chattanooga & St. Louis, with office at Nashville, Tenn., has been appointed federal general manager of that road, and **H. F. Smith,** president and traffic manager, is now traffic manager, with headquarters at Nashville, Tenn.

W. B. Storey, vice-president in charge of operation of the Atchison, Topeka & Santa Fe, has been appointed federal manager of the Atchison, Topeka & Santa Fe, the Panhandle & Santa Fe, the Rio Grande, El Paso & Santa Fe, the Kansas Southwestern, and the Grand Canyon Railway.

N. J. Abram, assistant superintendent of transportation, of the Chicago, Burlington & Quincy, with office at Chicago, has been appointed acting superintendent of transportation in place of **W. L. Barnes,** who is assistant manager of the car service section of the Railroad Administration at Chicago.

J. C. O'Donnell, superintendent of the Western lines of the Canadian Northern, with office at Fort Rouge, Man., has been transferred temporarily as acting general superintendent of the Western division to Edmonton, Alta., in place of **W. A. Brown,** who was injured recently in a track motor car accident.

G. F. Dickson, superintendent of the Georgia & Florida, and the Augusta Southern, with office at Douglas, Ga., has been appointed general superintendent of these lines, with office at Augusta, and the offices of superintendent, at Douglas., and superintendent car service, at Augusta, have been discontinued.

W. B. Scott, president of the Southern Pacific lines in Louisiana, has been appointed federal manager of the Southern Pacific Lines in Texas and Louisiana, excluding Houston East & West Texas, and Houston & Texas Central. The San Antonio & Aransas Pass and the Gulf Coast Lines, with headquarters at Houston, Tex.

C. W. Akers, superintendent of the Norfolk Southern, with office at Raleigh, N. C., has been appointed general superintendent—steam lines, on the same road, and **L. B. Wickersham,** general superintendent of the electric division, with office at Norfolk, has been appointed general superintendent and electrical engineer—electric lines.

M. S. Hawkins, assistant to president and secretary of the Norfolk Southern, with office at Norfolk, Va., has been appointed assistant to federal manager of the Virginian Railway and the Norfolk Southern; **J. D. Stack,** general superintendent of the Norfolk Southern, with office at Norfolk, Va., has been appointed general manager of the Virginian Railway.

F. L. Lamplough, trainmaster of the Grand Trunk, with office at Ottawa, Ont., has been appointed superintendent, Ottawa division, vice **L. G. Coleman,** resigned to take service with the United States Government. **W. E. Weegar,** passenger trainmaster at Montreal, Que., has been appointed trainmaster, with headquarters at Ottawa, vice Mr. Lamplough.

G. A. Stokes, superintendent of terminals of the Grand Trunk, with office at Port Huron, Mich., has been appointed superintendent, Toronto Terminals, vice **W. H. Farrell,** resigned to take service with another company, and **W. H. Matthews,** passenger trainmaster at Durand, Mich., has been appointed superintendent terminals at Sarnia Tunnel, Ont., vice Mr. Stokes.

E. J. Nordyke has been appointed acting trainmaster of the third district, of the Atchison, Topeka & Santa Fe Coast Lines, and of the Grand Canyon Railway, with office at Winslow, Ariz., vice **A. R. Woods,** who has been granted an indefinite leave of absence to enter military service, and **N. J. Hudson,** inspector of transportation, with office at Los Angeles, Cal., has been appointed acting trainmaster of the second district of the A., T. & S. F. Coast Line, with office at Winslow, vice **L. M. Shipley,** who has been granted an indefinite leave of absence to enter military service.

F. G. Pettibone, vice-president and general manager of the Gulf, Colorado & Santa Fe, has been appointed district director of the southwestern region, with headquarters at Dallas, Tex. Mr. Pettibone will have general charge of operations in the state of Texas, comprising the Texas lines of the several federal managers, and will report to the regional director, effective July 1.

J. L. Lancaster, receiver of the Texas & Pacific, has been appointed federal manager of that road, the St. Louis Southwestern of Texas, the International & Great Northern, except the line from Spring to Ft. Worth and the Madisonville branch; the Trinity branch of the Missouri, Kansas & Texas of Texas; the Beaumont & Great Northern, and the Louisiana Railway & Navigation Company lines west of the Mississippi river, with headquarters at Dallas, Tex.

J. H. Brinkerhoff, general superintendent of the Belt Railway of Chicago, has been appointed terminal manager of the Chicago Terminal district, effective July 1. In this position, he will have charge of all terminal operations in the terminal district, which includes the main line of the Elgin, Joliet & Eastern from Waukegan, Ill.. to Porter, Ind., and all terminals between that line and Lake Michigan, including the belt and switching lines. He will report to the regional director of the northwestern region.

J. S. Pyeatt, president and general manager of the Gulf Coast Lines, has been appointed federal manager of the Gulf, Colorado & Santa Fe; the Ft. Worth & Denver; the Ft. Worth & Rio Grande; the St. Louis-San Francisco & Texas; the Missouri, Kansas & Texas Railway of Texas; the Wichita Falls & North Western; the Texas Midland; the International & Great Northern, from Spring to Ft. Worth, and Madisonville branch, and the Houston & Texas Central Railroad, with headquarters at Dallas, Tex.

R. L. O'Donnel, assistant general manager of the Pennsylvania Railroad, has been promoted to general manager, with headquarters at Philadelphia, Pa., to succeed **Elisha Lee,** who was appointed federal manager. A photograph of Mr.. O'Donnel and a sketch of his career were published in the *Railway Age Gazette* of August 24, 1917, page 367. **C. S. Krick,** general superintendent of the New Jersey division, has been promoted to assistant general manager, with headquarters at Philadelphia; **Robert V. Massey,** general superintendent of the Eastern Pennsylvania division at Altoona, Pa., has been transferred as general superintendent to the New Jersey division, with headquarters at New York City; **N. W. Smith,** superintendent of the Middle division, has been promoted to general superintendent of the Eastern Pennsylvania division, with headquarters at Altoona, Pa.; **J. C. Johnson,** superintendent of telegraph, at Philadelphia, has been appointed superintendent of the Middle division, with headquarters at Harrisburg, and **J. C. Armstrong,** trainmaster on the Monongahela division, has been appointed superintendent of telegraph, with headquarters at Philadelphia.

Traffic

W. S. Yeatts has been appointed general freight agent of the Cumberland Valley Railroad, vice **Joseph Weed,** resigned to become division freight agent of the Pennsylvania Railroad.

Thornton Lewis, assistant freight traffic manager of the Chesapeake & Ohio, with office at Cincinnati, O., having resigned to become president of the White Sulphur Springs Co., Inc., the position of assistant freight traffic manager has been abolished.

W. B. Biddle, president of the St. Louis-San Francisco and of the Paris & Great Northern, with headquarters at St. Louis, Mo., has been appointed traffic assistant to the regional director of southwestern railroads, with headquarters in the same city.

R. I. Cheatham, assistant freight traffic manager of the Seaboard Air Line, has been appointed traffic manager. **B. C. Prince,** assistant to first vice-president, has been appointed assistant to traffic manager, and **G. S. Rains,** freight traffic manager, has been appointed assistant traffic manager in charge of freight; all with headquarters at Norfolk, Va.

Engineering and Rolling Stock

H. A. Schnitz has been appointed inspector of tonnage rating of the Chicago, Rock Island & Pacific, effective June 15, vice **C. M. Rogers,** promoted.

C. A. Kothe, master mechanic of the Erie, with office at Port Jervis, N. Y., has been transferred as master mechanic to Brier Hill, Youngstown, Ohio.

James C. Patterson, office engineer of the Erie, has been promoted to principal assistant engineer, and the position of office engineer has been abolished.

E. A. Hadley, chief engineer of the Missouri Pacific, with headquarters at St. Louis, Mo., has been appointed engineering assistant to the regional director of southwestern railroads, with the same headquarters, effective July 1.

Purchasing

L. M. Jones, assistant to general manager of the Norfolk Southern, with office at Norfolk, Va., has been appointed purchasing agent.

A. S. McKelligon, storekeeper of the Southern Pacific, at Sacramento, Cal., has been appointed general storekeeper, with headquarters at San Francisco, Cal., vice **H. G. Cook,** resigned.

Railway Officers in Government Service

Robert Collett, who was fuel supervisor and superintendent of locomotive performance of the Frisco Lines previous to 1914, and since that time assistant manager of the railroad department of the Pierce Oil Corporation, has been appointed assistant manager of the Fuel Conservation section of the United States Railroad Administration, with supervision over the Eastern region, and headquarters at New York.

Railway Officers in Military Service

F. A. Delano has resigned as a member of the Federal Reserve Board to accept a commission in the engineer corps for railroad service in France.

Obituary

J. D. McNamara, passenger traffic manager of the Wabash, whose death at St. Louis, Mo., on June 17 was announced in the *Railway Age* on June 21, was born at Keokuk, Iowa, on September 17, 1871. He entered the service of the Chicago, Burlington & Quincy as a ticket checker at Keokuk, Iowa, in 1885. Later he was transferred to the general passenger office at St. Louis, Mo., and in 1905, he was appointed general southwestern passenger agent at Kansas City, Mo. The following year he left the Burlington to become assistant general passenger agent of the Wabash at St. Louis. Subsequently, he became general passenger agent and passenger traffic manager, which position he held at the time of his death. Mr. McNamara was recently appointed a member of the passenger traffic committee of the eastern regional district, with headquarters at New York. On June 14, he returned to St. Louis for a short visit with his family, and on the evening of the 15th he received injuries in an automobile accident which resulted in his death 5 hours later.

J. D. McNamara.